Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

AVMA Convention — San Antonio, Oct. 15-18, 1956

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Vol. 129 **July 1, 1956** **No. 1**

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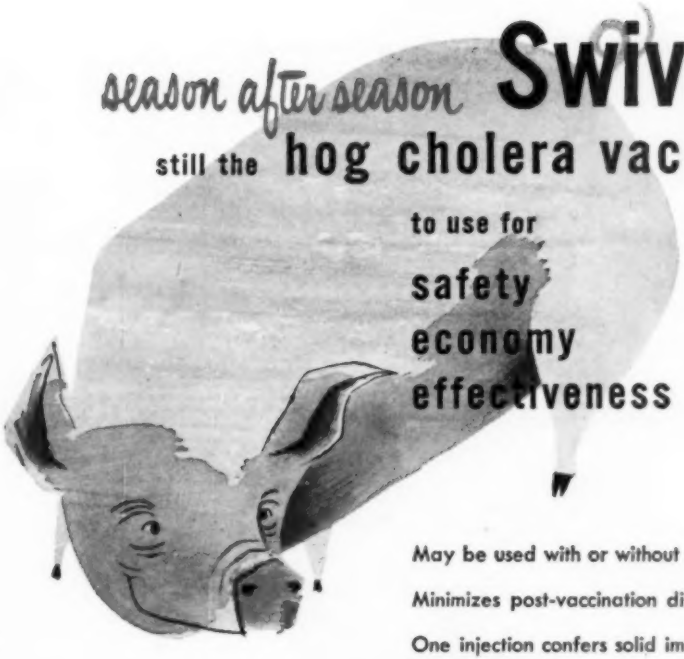

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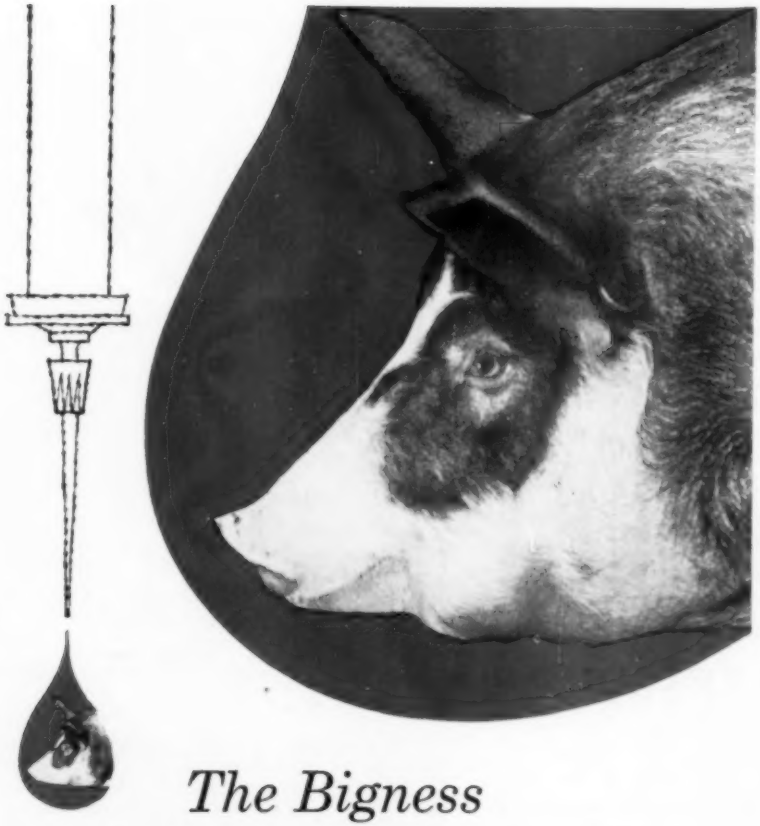

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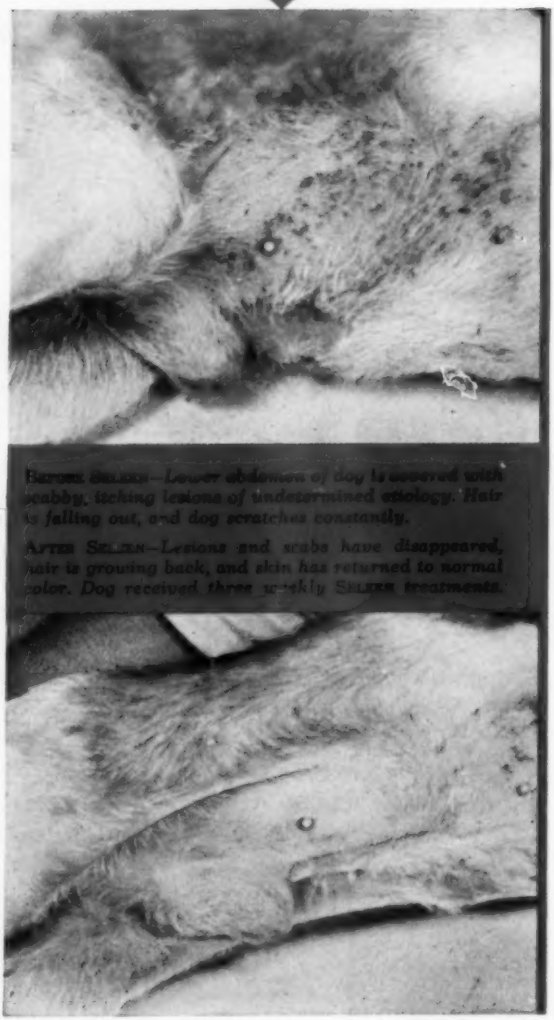

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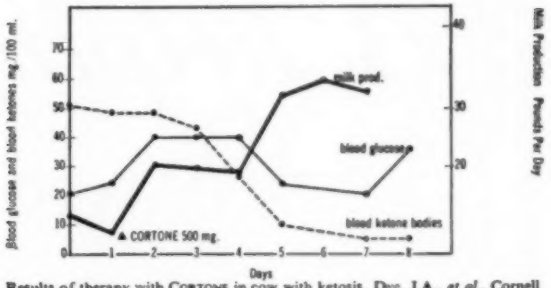

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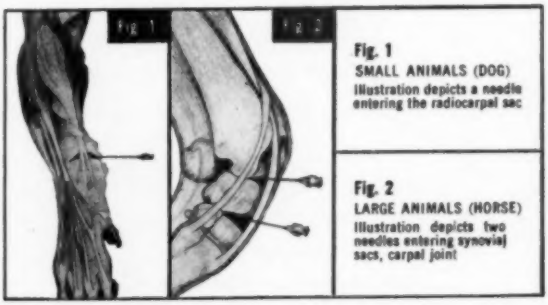

Fig. 1
SMALL ANIMALS (DOG)
Illustration depicts a needle entering the radiocarpal sac

Fig. 2
LARGE ANIMALS (HORSE)
Illustration depicts two needles entering synovial sacs, carpal joint

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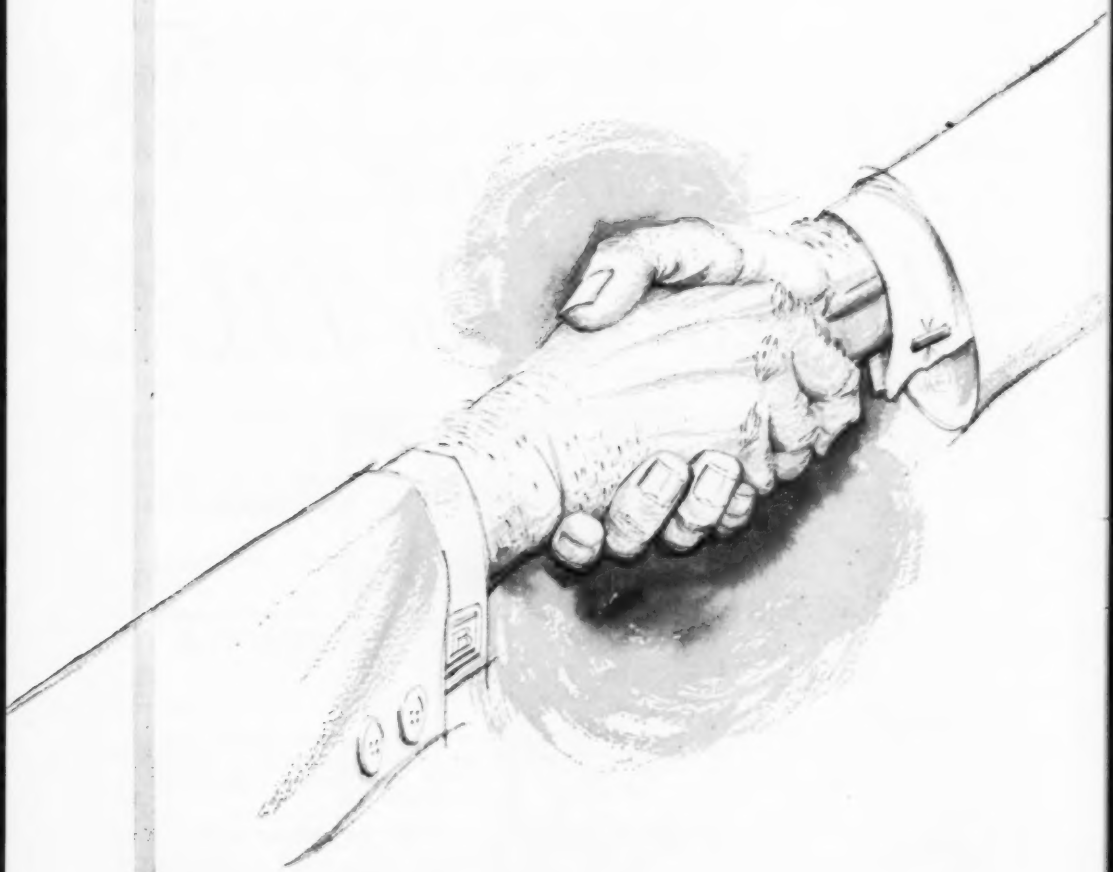

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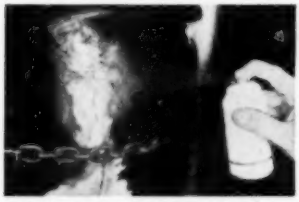

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1. Conner, G.H.: Vet. Med. 50:259 (June) 1955.
2. Watts, R.E.: J.A.V.M.A. 125:40 (July) 1954.
3. Wendt, W. E.: Personal communication (Sept.) 1954.
4. Choy, D.S.J., and Wendt, W.E.: U.S. Armed Forces M.J. 3:1241 (Sept.) 1952.

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AVMA ☆ Report

Veterinary Medical Activities

✦ President Floyd Cross participated in the program of the California V.M.A. meeting held in Los Angeles, June 10-13; the Alberta V.M.A. at Edmonton, June 22-23; North Dakota V.M.A. at Jamestown, June 25-26; and Pacific Northwest V.M.A. at Vancouver, B.C., June 28-30. Dr. Cross also addressed the Nebraska Stock Growers Association at North Platte on June 15.

* * *

✦ President-Elect Wayne O. Kester addressed the North Carolina V.M.A. meeting in Greensboro on June 26 and the South Carolina Association of Veterinarians at Clemson College, on June 28-30.

* * *

✦ Executive Board Member E. C. Stone (District VII) represented the Association and participated in the program of the Wyoming V.M.A. meeting in Pinedale, June 9-11; the Montana V.M.A., Livingston, June 13-15; the Idaho V.M.A., Salmon City, June 18-20; and the Utah V.M.A., Provo, June 21-22.

* * *

✦ Executive Secretary J. G. Hardenbergh and Assistant Executive Secretary H. E. Kingman inspected facilities at Denver, Colo., on June 7, in view of the invitation to hold the 1960 AVMA annual meeting in that city.

* * *

✦ Assistant Executive Secretary Kingman attended the meeting of the California V.M.A. in Los Angeles, June 10-13, and also surveyed convention facilities in view of the invitation to hold the 1960 AVMA annual meeting in that city. Dr. Kingman met on June 15 with the Committee on Local Arrangements for the 1956 annual meeting in San Antonio, to be held Oct. 15-18.

* * *

✦ Dr. David Bartlett, Chicago, and Dr. C. N. Murphy, Oklahoma A. & M. College, represented the AVMA at the Third International Congress on Animal Reproduction and Artificial Insemination in Cambridge, England, June 25-30.

* * *

✦ Drs. H. E. Kingman, Jr., assistant executive secretary of the AVMA, and G. H. Good, state veterinarian of Wyoming and vice president of the U. S. Livestock Sanitary Association, are serving on the ten-man committee named by the U. S. Department of Agriculture to consider proposals and recommend a site for a new laboratory for research and diagnosis of animal diseases. The committee held its first meeting in St. Louis on June 27.

* * *

✦ The AVMA-Armed Forces Institute of Pathology exhibit on leptospirosis was displayed at the Am.M.A. annual meeting held in Chicago, June 11-14. Dr. C. L. Davis, ARS, U.S.D.A., Lt. R. M. McCully, AFIP, and R. G. Rongren, AVMA office staff, were in attendance.

* * *

✦ Dr. Raymond B. Church, Winsted, Conn., participated in the panel at the Medical Civil Defense Conference of the American Medical Association, June 9. The panel included an opthalmologist, a dentist, a veterinarian, a nurse, a hospital administrator, and a physician; the discussion was devoted to the subject, "Our Professional Contributions for Disaster Planning."

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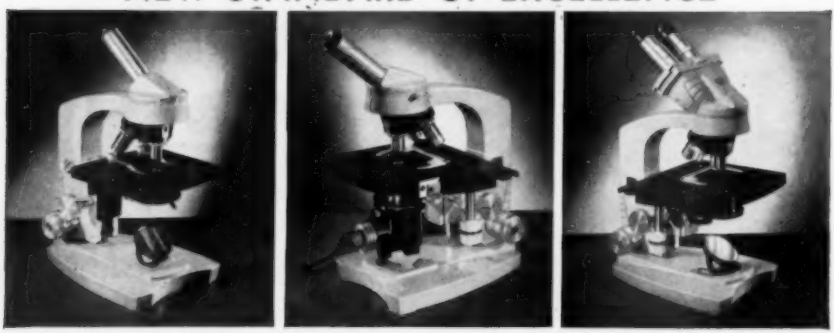

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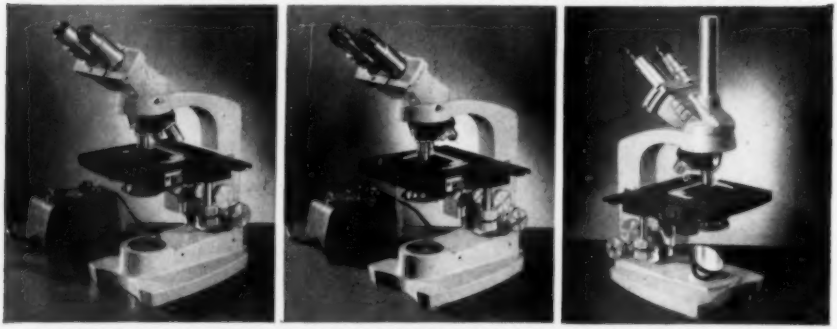

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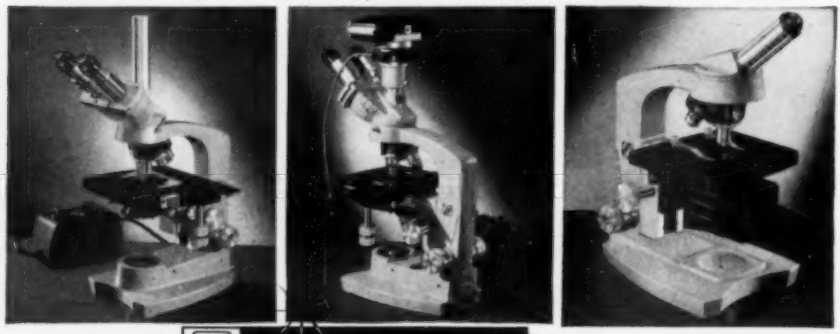

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Anomalies of the Aortic Arches Causing Strangulation of the Esophagus and Trachea

A Case Report—Surgical Correction in a Dog

GEORGE A. LINTON, M.R.C.V.S., D.V.M.

Davis, California

AORTIC ANOMALIES in which vascular rings may encircle the trachea and esophagus have been well described, in the literature, in man and somewhat more sparsely in animals.

LITERATURE CITED

Bayford,[1] in 1789, described the condition in an aged woman who had suffered from dysphagia and a sense of suffocation since infancy. Her right subclavian artery rose from the left side of the aortic arch, distal to the left subclavian artery, and passed dorsal to the esophagus to reach its normal position (fig. 5). Bayford called this case "dysphagia lusoria" for, in his day, it was popular to describe a minor congenital anomaly as a "lusus naturae," a prank or trick of nature. Gross,[2] in 1945, first claimed the correction of a double aortic arch and, by 1951, he and Neuhauser[3,4] had treated 40 cases surgically.

In veterinary medicine, Gorton,[5] Jex-Blake,[6] Milks and Williams,[7] Davis and Ottoway,[8] Brandt,[10] Van Lennep,[11] Roberts *et al.*,[12] Detweiler,[13] and Klotz and Brewer[14] have all reported 1 or more cases. More recently, since the completion of this manuscript, Detweiler and Allam[15] published an extensive review of the literature and reported 5 additional cases with a successful surgical correction in 1 case.

In Olafson's report[9] on 5 dogs, 3 were Boston Terriers from the same kennel. Of the anomalies of the vascular arches causing symptoms in man, a double aortic arch (fig. 2) is the commonest while, in the dog, there is but one report of this as compared with 17 described as persistent right aortic arch.

Abnormalities of the aortic arches are probably more common in veterinary medicine than the literature suggests. This article is written in the hope that this information will assist the clinician in surgical correction of these cases.

From the University of California, School of Veterinary Medicine, Veterinary Clinic, Davis.

The figures used in this article are original drawings by Mr. David Akers, technician, Department of Anatomy, University of California, Davis.

EMBRYONIC DEVELOPMENT

In early embryonic life, the principal arteries consist of paired longitudinal dorsal aortas, which fuse posterior to the level of the fourth thoracic vertebra to form the definitive descending aorta, and a pair of ventral tubes, which constitute the ventral aortas anteriorly and fuse posteriorly to form the heart. Anterior to these areas of fusion, a series of aortic arches develops between the dorsal and ventral aortas in positions corresponding to the ancestral branchial arches.

The anterior arches form first and disappear or are modified as the posterior ones form. Normally, the first two pairs regress early, the third pair contributes to the internal carotids, and the fourth, on the right, forms the right subclavian artery and, on the left, contributes to the formation of the aortic arch. The fifth pair in mammals is minute and transitory. The conus arteriosus splits to form the systemic trunk and pulmonary trunk, and the sixth pair of aortic arches arises from the latter. Normally, the left sixth arch then connects the pulmonary artery to the left aortic arch and forms the ductus arteriosus in the fetus and the ligamentum arteriosum after birth.

The portions of the dorsal aortas between the origins of the third and fourth arches disappear on both sides, as does the right

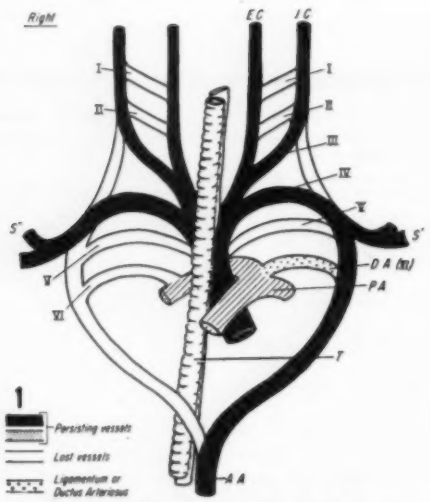

Fig. 1—Schema of normal aortic arch.

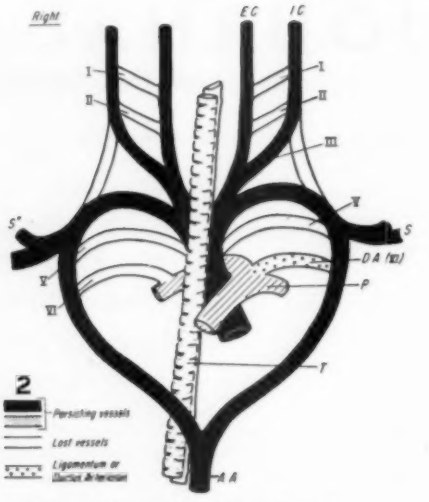

Fig. 2—Schema of double aortic arch.

EC = external carotid; IC = internal carotid; DA = (VI) ductus arteriosus; PA = pulmonary artery; T = trachea and esophagus; AA = descending (dorsal) aorta; S' = left brachial artery; S" = right brachial artery; I, II, III, IV, V, VI = aortic arches.

dorsal aorta between the origin of the right brachial and its point of fusion with the left dorsal aorta, to form the single descending aorta (fig. 1). This description is somewhat simplified, and that it is a half truth to say that "the aortic arches arise from the left fourth aortic arch" has been well brought out by Barry[16] but, for the purposes of a clear clinical description, the finer points in the ontogeny of the aortic arches may be ignored.

It is important to visualize that the esophagus and trachea are encircled by a vascular ring at one point in the development of the fetus. They lie above the heart and are encircled by the fourth and sixth pairs of arches (fig. 3). It is the disappearance of these two arches on the right that normally permits the esophagus and trachea to escape from this vascular chain and to be pushed to the right by the persisting left arches. If there were a complete transposition, the persistence of the fourth and sixth right aortic arches, as the functional aorta and ductus arteriosus, would result in displacement of the trachea and esophagus to the left and they would not be strangulated. It is the persistence of the fourth and sixth arches on opposite sides (fig. 4), the persistence of the fourth, fifth, or sixth arches on both sides (fig. 3), or the arising of the right brachial artery after the origin of the left brachial artery (fig. 5) that gives rise to strangulation of these organs. A classification of these anomalies based on embryonic development is given by Edwards,[17] and Neuhauser as quoted by Dolton and Jones.[18] All these anomalies have been reported in man[19] and can occur in animals.

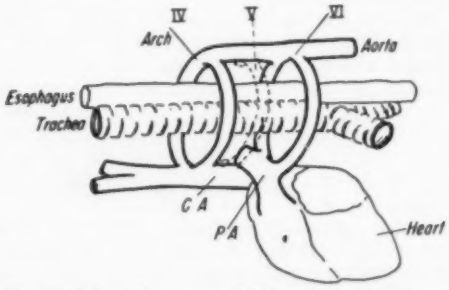

Fig. 3—Schematic representation of vascular rings. CA = common aorta; PA = pulmonary artery.

DIAGNOSIS

The diagnosis is based on clinical signs and radiological examination. Symptoms of encirclement of the esophagus and trachea occur in the very young animal, usually about the time solid food is first offered. "Wheezy" respiration is more noticeable after feeding, and inhalation pneumonia

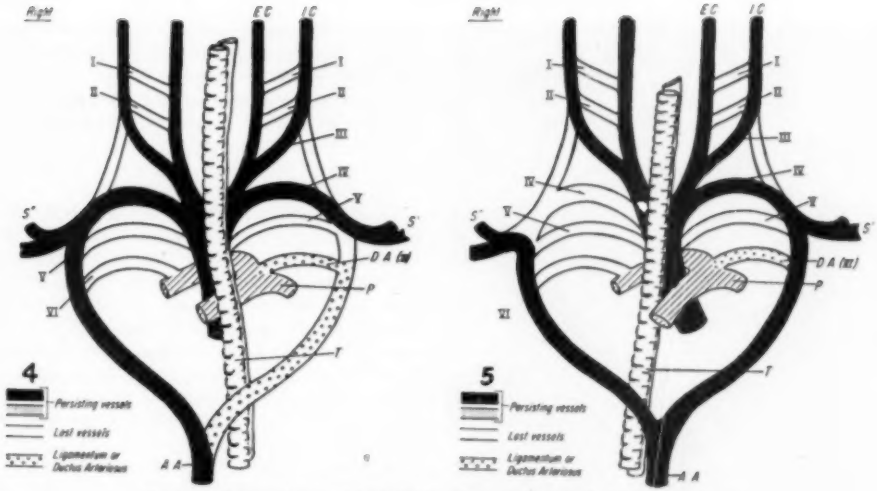

Fig. 4—Schema of a persistent right aortic arch with left ductus arteriosus.
Fig. 5—Schema of right subclavian artery arising from left fourth aortic arch.

EC = external carotid; IC = internal carotid; DA = (VI) ductus arteriosus; PA = pulmonary artery; T = trachea and esophagus; AA = descending (dorsal) aorta; S' = left brachial artery; S'' = right brachial artery; I, II, III, IV, V, VI = aortic arches.

Fig. 6—Radiograph of cervical and thoracic region of a 2-month-old Weimaraner pup, showing the barium-filled esophagus to be constricted at the fourth thoracic intercostal space (arrow).

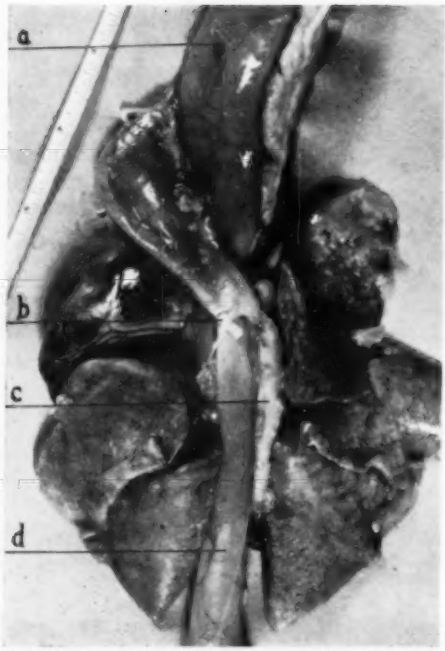

Fig. 7—Dorsal view of esophagus and thoracic viscera from another animal with a right aortic arch. The ligamentum arteriosum (raised here by a piece of wood) connects the pulmonary trunk to the right aorta, trapping the esophagus and trachea; a = esophagus dilated; b = ligamentum arteriosum; c = aorta; d = esophagus.

may occur. The most outstanding symptom is a voracious appetite and persistent vomition immediately after eating. There may be a tendency for overextension of the head, in which position the trachea is stretched and straightened. In some instances, the anomaly may occur without producing obvious symptoms.

Since any constriction of the esophagus will give rise to similar symptoms, radiological examination is essential for correct diagnosis. Angiocardiography will give precise information about the disposition of the great vessels but, as yet, it is seldom within the scope of the veterinary practitioner. A double aortic arch or right aortic arch with persistent left ductus arteriosus may cause a narrowing of the trachea; a right subclavian artery arising from the left gives rise to a longer oblique stricture. After barium is swallowed, the esophagus will appear constricted at the third or fourth intercostal space. If the cause is a double aortic arch, the esophagus will be almost in the midline; if a right aortic arch exists, the esophagus will be displaced to the left; and if the anomaly is a right brachial artery originating from the left, the esophagus will be in its normal position to the right of the midline.

CASE REPORT

A 2-month-old Weimaraner pup was brought to the clinic with a history of persistent vomition soon after eating, the condition having been observed for a month. The pup ate ravenously in large gulps; then, in about one minute, vomited the mucus-covered food. It was able to retain liquid food and, apart from some emaciation, physical examination revealed no abnormalities. The litter mates were well and thriving.

Esophagospasm, foreign bodies in the stomach, or vascular rings around the esophagus were considered. Radiological examination after barium ingestion revealed a stricture of the esophagus at the fourth intercostal space (fig. 6) and displacement of the esophagus to the left of the median plane. A tentative diagnosis of persistent right aortic arch was made and permission was obtained for surgery.

Surgical Treatment.—After nembutal® anesthesia, a trachea tube was passed for positive ventilation of the lungs. The dog was secured in lateral recumbency with its forelegs drawn forward, and its left side was prepared for surgery. A 3½-inch incision was made into the pleural cavity through the fifth intercostal space, starting at the level of the posterior angle of the scapula. The ribs were separated with retractors. The lungs were kept out of the operative field with other retractors held by an assistant. A stomach tube was then passed slowly along the esophagus until it met resistance. Proximal to the stricture, the esophagus was so thin that the red color of the stomach tube could be seen clearly through it. The mediastinum was carefully incised dorsal to the phrenic and vagus nerves, and the stricture-causing band was slowly cut with Mayo dissecting scissors. The stomach tube now passed into the stomach quite freely. No attempt was made to suture the mediastinum.

Closure of the chest cavity was effected by inserting four interrupted stainless steel sutures which encircled the fifth and sixth ribs. After the retractors were removed and the ribs closely approximated with a pair of forceps, the first three steel sutures

were tied. A hemostat was then passed through the incision and the jaws opened until the lungs were seen to be fully inflated. The hemostat was then quickly removed and the fourth suture made tight. The fascia was approximated with continuous catgut sutures, the skin with interrupted dermalon sutures, and the suture line was painted with flexible collodion. The positive-pressure ventilation was disconnected and the pup started to breathe normally in about one minute. In an attempt to reduce the pneumothorax, about 150 cc. of air was withdrawn by paracentesis with a 20-gauge needle.

Aftercare.—Respiration remained normal, with no evidence of pneumothorax. The edema at the wound was relieved by withdrawing about 75 cc. of serous fluid on the fourth day. For the first few days, a mushy food was given. There was evidence of a dilatation of the esophagus, with pasty food being vomited for four weeks subsequent to the operation. Meat and other foods were well tolerated. Slow feeding was enforced, since rapid intake of large quantities of food caused reflex vomiting after a five-minute period. Two months after surgery, the dog was able to eat normally and periodic reports from the owner indicated that this continued to be the case.

SUMMARY

The embryology and symptoms of anomalies of the aortic arches are discussed.

A case of stricture of the esophagus in the dog due to persistent right aortic arch is described, along with its surgical correction.

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Persistent Right Aortic Arch in a Calf

JAMES R. ROONEY, II, D.V.M., and DOUGLAS F. WATSON, D.V.M.

Blacksburg, Virginia

A Holstein-Friesian male calf, born Dec. 26, 1955, and twin to a female, was removed from the dam three days later and placed in an experimental pen. He was fed the dam's milk in a bucket but would choke and regurgitate milk through the nose. Examination revealed a temperature of 102.4 F. and areas of dullness and moist râles in the lungs. The heart sounds were strong but muffled. The breath was sour and fetid. The temperature became normal after three days of antibiotic treatment. The calf

From the Section of Animal Pathology, Biology Department, Virginia Polytechnic Institute, Blacksburg.

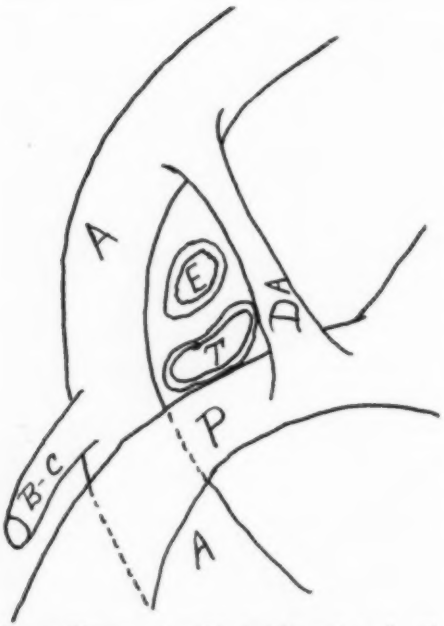

Fig. 1—Diagram of persistent right aortic arch with aorta (A), pulmonary artery (P), ductus arteriosus (DA), brachiocephalic trunk (B-C), esophagus (E), and trachea (T).

was fed small amounts at frequent intervals and appeared to be progressing normally until January 3, when he again choked, regurgitated, and stood with his elbows abducted. In view of a history of congenital anomalies in previous calves of this bloodline, the calf was destroyed on Jan. 5, 1956.

Necropsy revealed an adherent thrombus in the left circumflex iliac artery at its bifurcation into anterior and posterior branches. The abdominal cavity presented no significant findings. There was persistent fetal collapse of the ventral portions of the apical and cardiac lobes of both lungs.

The pericardial sac contained an excess of cloudy, reddish pericardial fluid. The epicardial surface of the heart was marked by vertical white streaks, apparently of fibrous tissue. The coronary arteries and veins were normal. The foramen ovale was patent.

The aorta arose normally from the left ventricle of the heart, giving off the brachiocephalic trunk from its cranial surface. It then curved dorsally and caudally but deviated to the right of the trachea and esophagus instead of to the left. The thoracic and abdominal portions of the aorta

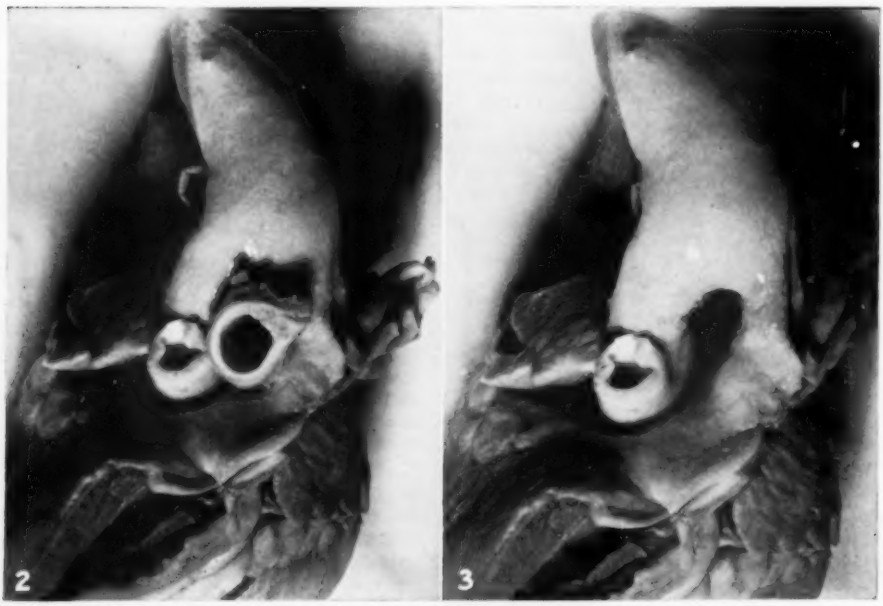

Fig. 2—Heart, cranial view. Note vascular ring surrounding esophagus and trachea.
Fig. 3—Heart, cranial view with esophagus and trachea removed.

were in the normal position ventral to the vertebral bodies and slightly to the left of the midline. The patent ductus arteriosus passed from the pulmonary artery before its bifurcation to the aorta dorsal to the esophagus and trachea. The trachea and esophagus were, therefore, surrounded by a vascular ring formed by the right aortic arch, ductus arteriosus, and pulmonary artery. No left arch was present (fig. 1 to 3). The esophagus was not dilated, but significant compression and narrowing of the trachea were apparent.

DISCUSSION

Olafson[1] credited Jex-Blake with the first description of persistent right aortic arch in the dog and added 5 cases of his own. Roberts *et al.*[2] described a case of persistent right aortic arch in a 5-year-old Guernsey bull. Edwards[3] and Potter[4] discuss persistent right aortic arches in man. The case presented here is almost identical to that of Roberts *et al.* except that in the present case the ductus arteriosus arose from the pulmonary artery before the bifurcation rather than from the left pulmonary artery.

The vascular ring, causing compression of the esophagus and trachea, provides an explanation for the clinical symptoms of regurgitation, choking, and pulmonary dullness and râles, as well as the necropsy finding of extensive fetal atelectasis. Cyanosis was not observed but may have occurred as sporadic, unobserved attacks.[5] The pericardial effusion appeared to be sufficient to account for the muffled heart sounds and the inability to detect the "machinery murmur" expected with a patent ductus arteriosus.[5]

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Truckers Aid Disease Control

In the past decade, the percentage of livestock trucked to market has increased from about 60 to 90. At the same time, shipping injuries have been cut in half. Also, more care in cleaning and disinfecting trucks was a factor in controlling vesicular exanthema and is still an important factor in the control of brucellosis. —*Livestock San. Committee, Sioux City, Iowa, April 1, 1956.*

Rabies in a Girl.—A 7-year-old girl, in New Mexico, developed rabies and died in 72 hours. Her unvaccinated pup had died with rabies two months previously but, since she had not been bitten or closely associated with the pup, prophylactic Pasteur treatment had not been given.—*Pub. Health Serv., May 5, 1956.*

Surgery and Obstetrics
and Problems of Breeding

Treatment of Fractures of the Long Bones in Large Animals

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THE PRINCIPAL DIFFICULTY in the treatment of fractures of the long bones in large animals is the application of a suitable temporary substitute for the broken bone which is strong enough to carry the entire weight of the animal and which permits full freedom of movement without pain.

The basic principles of fracture treatment, as outlined by Boehler,[1] are as follows:

1) In every fracture the displaced bone ends must be correctly replaced.

2) The corrected fragments of the fracture must be retained in correct position until bony union has occurred.

3) While the necessary fixation of the fragments is maintained, many or all of the joints of the injured limb and the whole body are given a full range of movements as far as possible without causing pain. The object of this movement is to prevent damage to the circulation, atrophy of the muscles and bones and stiffness of joints (the functional restoration of movement).

To obtain these ends, an attempt was made to adapt well-established methods of human medicine to the different requirements of animals.

The object of this series was not only to achieve bony union of the fragments but, also, full restitution of the patients so that they could resume their former tasks without impediment. This was achieved in 57 of 64 cases, with 16 horses returning to competitive performances unimpaired.

A series of 51 horses and 13 cattle was treated, employing two principal methods: (1) the unpadded plaster of paris cast and (2) the transfixation with Steinmann pins* (8-mm. diameter).

THE UNPADDED PLASTER OF PARIS CAST

Methods and Materials.—A fracture is properly immobilized when the joints above and below the fracture are immobile. The unpadded plaster of paris cast is, consequently, applicable in fractures below the carpal or tarsal joint. On hindlegs, the cast proved to be too cumbersome, immobilizing the whole animal; it, therefore, was applied only in cases of fractures of the phalangeal bones in the forelimbs and in fractures of the metacarpus.†

Since the cast not only has the function of immobilization of the fracture but also has to serve the patient as an artificial limb, the largest possible surface is desirable and, consequently, the cast was always applied from the toes to the elbow joint. Thus, the pressure was evenly distributed over a large area and no damage to skin or joints occurred.

Technique.—Since the animal is completely anesthetized, the muscles are relaxed and the replacement of the fragments is not difficult. It was found most convenient to place the patient on its back, the injured limb extended toward the ceiling by means of a small block-and-tackle unit. Thus, replaced fragments can be kept in position and the application of the cast is not difficult. For the exact replacement of the fragments, two radiographs are taken (one anteroposterior, one lateromedial), developed, and placed in front of the surgeon in such a manner that he can watch them during his performance. A skeleton of the injured limb was always kept handy. The extension is always arranged so that all joints are in a midway position, without tension on flexors and extensors. The extension is attached to the hoof and removed after the cast is finished. In no case is any force necessary; it is vitally important that the fragments are not pulled apart but are in close contact to each other.

From two wet plaster bandages, splints (longetts) are folded by rolling the bandage back and forth on a board in the de-

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The author thanks Drs. Lorenz Boehler and Stefan Krenslehner for essential advice and moral support. He also thanks Dr. Frank Milne and the Ontario Veterinary College, Guelph, for making it possible to illustrate the subject and for providing figures 1 to 6.

[1]Boehler, Lorenz: The Treatment of Fractures in Peace and War. English edition by Wright, Bristol, England, 1934; German edition by Mandlich, Vienna, Austria, 1929.

*Manufactured by the Kuershner Surgical Supply Co., Washington, D. C.

†An analysis by the author of insurance company and slaughterhouse statistics on approximately 5,000 equine and bovine fractures over a period of ten years shows the following incidence of fracture locations: phalangeal bones, 33 per cent; metacarpus, 21 per cent; tibia, 18 per cent; metatarsus, 7 per cent; radius-ulna, 6 per cent; humerus, 5 per cent; femur, 7 per cent; pelvis, 2 per cent; spine, scapula, and cranium, 1 per cent.

Fig. 1—Fracture of the right radius in a 3-year-old Holstein-Friesian cow. The distal pin is in place and the proximal pin will be drilled through the olecranon process since the radius is fractured in its proximal third.

Fig. 2—Both pins are in place and the wounds covered with Peru balsam.

sired length and width for the cast. They are laid on laterally and medially and then fastened with three to six circular bandages, depending on the weight and temperament of the patient. No stress is used but the whole cast is molded to the limb as evenly as possible. It was found most satisfactory to place the cast directly on the dry hair without any preparation, so that the hair can bind with the cast, eliminating undesired movement of the limb in the cast. By the time the cast comes off, the hair is replaced.

When the first part of the cast is completed, the U-shaped walking splint (fig. 24, 1) is adapted so that it fits the profile of the cast as much as possible. A one-finger-wide space is spared on both sides of and below the hoof. This was found important for two reasons. First, to eliminate pain and movement, the toe should not touch the floor when the animal stands erect. Second, the walking splint is fixed to the first part of the cast by circular bandages around the whole limb. In the spaces provided on both sides of the hoof, small turns are also made around the splint itself to prevent undesired movement in the anteroposterior direction. The splint should be fastened before the first part of the cast is hard, so that the following three to six bandages can bind and form a unit, otherwise the fixation of the splint in the cast is not firm enough.

The number of bandages needed depends

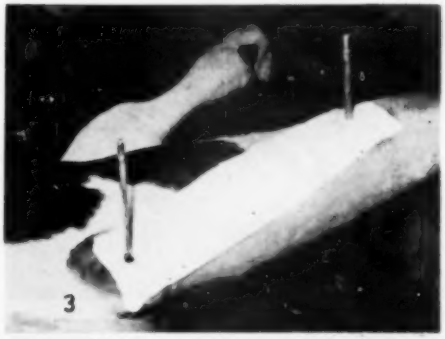


Fig. 3—Longetts are placed laterally and medially (medial one not shown).

Fig. 4—Fixation with circular bandages.

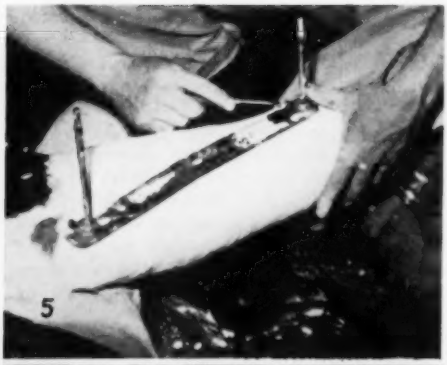


Fig. 5—Lateral iron splints are applied to the pins and fastened with screws. (The proximal-medial screw is made flat and coin-shaped to prevent damage to the skin on the ventral thorax.)

Fig. 6—The projecting parts of the pins are removed and the cast finished with more circular bandages.

on the weight and the temperament of the patient; seven to 12 bandages should be enough in every case. The strength of the cast does not depend on the mass of plaster but primarily on the technique and skill of its application. The cast, serving as an artificial limb, has to fit perfectly, especially around the part which covers the radius. The volume of the muscles changes when an animal stands erect; if the cast fits too tightly, it has to be cut open and closed in the right size.

The animal is always kept on the floor until fully awake. The first attempt to stand up is supported by the block and tackle unit used to lay down the animal. After a few hours of walking around freely, all animals accustomed themselves to the cast and did not need any further assistance.

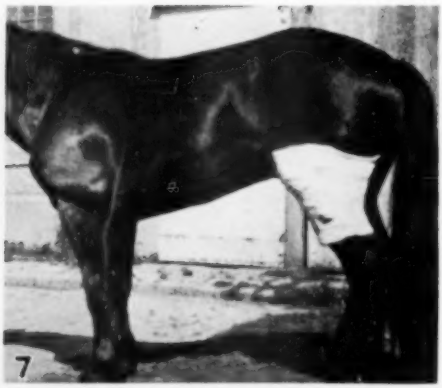


Fig. 7—Fracture of the distal epiphysis of the left femur, in a 3-year-old stallion, in transfixation cast. Proximal pin is placed through the shaft of the femur and distal pin through the crest of the tibia.

Aftertreatment and Results.—Aftertreatment of fractures started on completion of the cast. In all 21 cases treated with this type of cast, the movement was free after three days. The animals, allowed to run unrestrained in the fields whenever possible, were apparently as active as at any time before the accident. There is no better aftertreatment than this free, active movement of the animal. No medicament or dietary supplements are known to shorten the time of bony union.

The cast was removed after six weeks in all cases, with the animal standing and without difficulty. The lameness, after the removal of the cast, usually lasted two to four days. The whole limb was massaged with cod-liver oil. Although the average weight of the casts was 2.7 kg., in no case was any damage to the skin observed. One animal, admitted nine days after the accident, was killed when it lost the hoof from the uninjured foreleg during the treatment. All other animals performed their former tasks after the treatment for the following three years without impediment.

THE TRANSFIXATION WITH STEINMANN PINS

Methods and Materials.—Fractures of the radius, ulna, tibia (olecranon process), metatarsus, and the phalangeal bones in the hindlegs were treated by transfixation with Steinmann pins. This method gives the

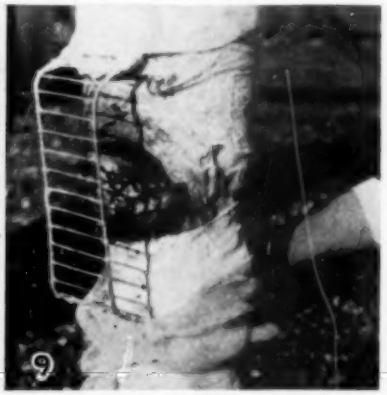


Fig. 8—Fracture of the left radius with open carpal joint in a 16-year-old Thoroughbred mare, 11 months pregnant. A window in the cast for the treatment of the wound is covered with gauze.

Fig. 9—Close-up of cast in figure 8, with gauze removed for treatment. The window is bridged by a Crammer splint which is embedded in the cast.

animal the most freedom of movement and was found in this way superior to the unpadded plaster of paris cast; however, the application of two pins through the bone makes it more dangerous.

The principle of this method is that two pins are driven lateromedially through the uninjured epiphysis of the injured bone or, if this is not possible, through the epiphysis of the next following bone; the two pins are then bridged by two lateral iron splints, immobilizing the fracture between the pins. The circular fixation is done by a light, unpadded plaster of paris cast. Even the fracture of a distal epiphysis of a femur was treated successfully by this method (fig. 7).

Technique.—The correct points for placing the pins are determined by the position of the vessels, nerves, and ligaments, so they are not difficult to find (fig. 12 to 23). Laterally, these points are more distinctive and the drilling, therefore, is always done lateromedially. The hair is clipped in an area 2 inches square and the skin painted with tincture of iodine. Without any other preparation, the pin is pointed through the skin to the right point on the bone. Using an electric drill, the pin is driven through the bone with three or more rest intervals to prevent the pin from becoming hot. The

Fig. 10—Fracture of the left tibia, of an 18-month-old bull, in a transfixation cast. Proximal pin through crest of tibia, distal pin through the tuber calcis of the fibular tarsal bone, since the fracture was located in the distal third of the tibia.

Fig. 11—Same bull as in figure 10. The cast is removed, the pin wound scarcely visible.

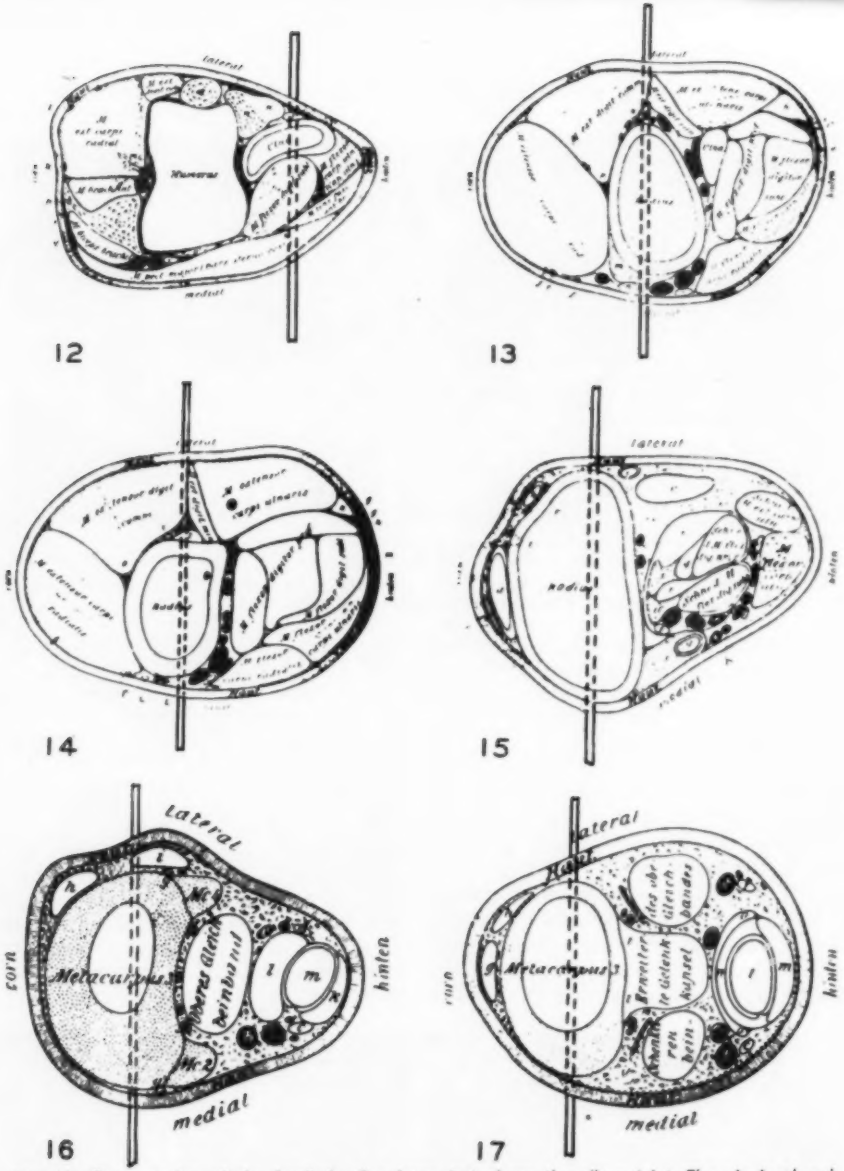


Fig. 12—Cross section of the forelimb of a horse just above the elbow joint. The pin is placed through the olecranon process of the ulna.

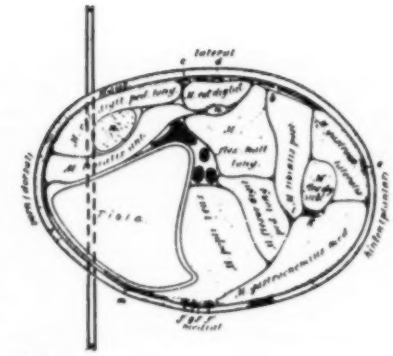
Fig. 13—Position of the proximal pin through the radius 3 inches below the elbow joint.

Fig. 14—Approximately 2 inches proximal to position in figure 13, in case the fracture has destroyed that location. Also, the olecranon process was used for fixations of radius fractures (fig. 1 to 6).

Fig. 15—Distal epiphysis of the radius about 1 inch proximal of the distal external tuberosity but distal to the tip of the ulna. The pin should be driven slightly dorsal of the described line, since the capsule of the carpal joint extends on the volar surface higher up and must not be injured.

Fig. 16—Proximal epiphysis of the metacarpus. Since the joint capsule inserts on the upper margin of the bone, the location for the pin is $1\frac{1}{2}$ inch distal to the head of the small lateral metacarpal bone.

Fig. 17—Distal epiphysis of the metacarpus. The pin should be placed between the distal external tuberosity and the distal end of the fourth metacarpal bone. The capsule of the fetlock joint does not extend this high medially and laterally.



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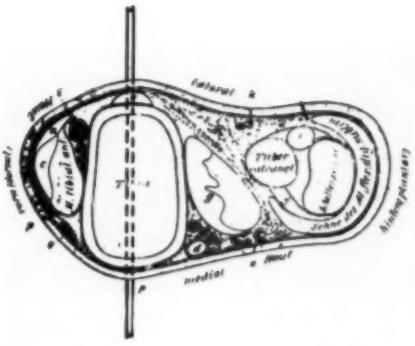

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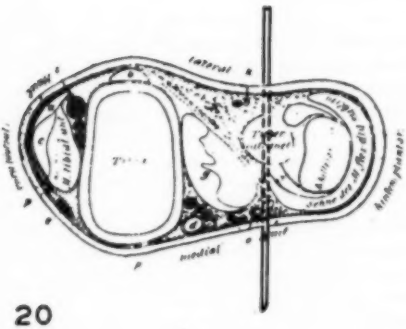

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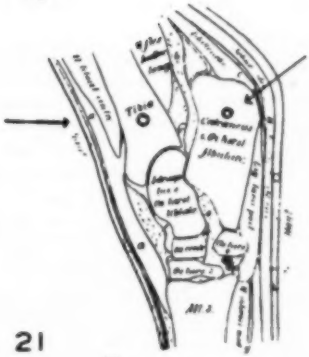

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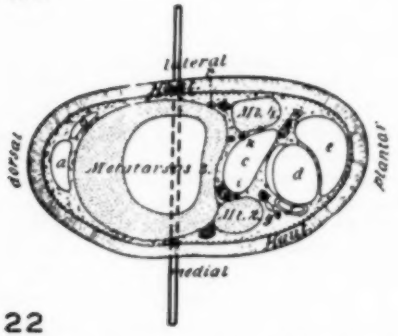

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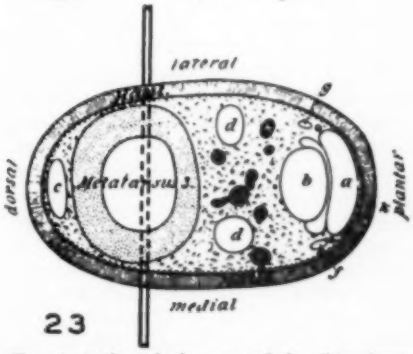

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Fig. 18—Proximal epicondyle of the tibia (horse). The pin is through the crest of the tibia about 3 inches from the proximal extremity. The pin should be placed 1 inch posterior to the margin of the tibial crest but anterior to the middle of the bone to avoid blood vessels.

Fig. 19—Distal pin through the tibia. Because of the pouches of the tarsal joint, the pin has to be placed nearly 2 inches proximal to the external malleolus. The tendon of the lateral digital flexor muscle can be palpated and must be spared.

Fig. 20—Pin is placed in the tuber calcis of the fibular tarsal bone when the distal portion of the tibia is destroyed. This fixes the hock joint but does not interfere with the free movement of the animal.

Fig. 21—Side view of figures 19 and 20.

Fig. 22—Proximal epiphysis of the metatarsus. The pin has to be placed 1½ inch distal from the upper margin of the bone and well in front of the smaller metatarsal bone.

Fig. 23—The distal pin in the metatarsus is placed 1 inch proximal to the eminence of the lateral ligament.

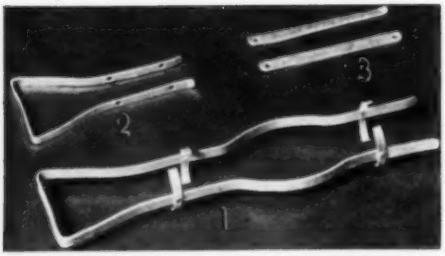

Fig. 24—Walking splint (1) for the unpadded plaster of paris cast. The crossbars are made from thinner material so they can be bent around the limb. They should be attached at different levels above and below the carpal joint. Good fixation to the splint is essential.

Walking splint (2) for transfixation cast. The holes in the splint have to be drilled so that they fit exactly to the pins in the bone. It is necessary, especially in this case, that the pins are drilled strictly parallel.

Lateral splints (3) for transfixation cast.

revolutions of the pin widen the pin channel too much and the tight fit of the pin in the bone is essential to prevent infection. Consequently, the first third of the pin is cone-shaped; when the point of the pin is felt through the skin on the medial side, the drill is removed and the pin driven by hand into its final position. Thus, the bone fits perfectly around the pin. Using an air-pressure hammer, the pin does not become hot and the tight fit is assured (fig. 1).

In the first few cases, too much attention was paid to preventing infection of the skin wounds around the pins. Finally, they were covered only with Peru balsam with satisfactory results (fig. 2).

After both pins are in place, two longetts are prepared in the desired length of the cast, placed laterally and medially (fig. 3), and fastened with two or three circular bandages (fig. 4). Lateral splints are then prepared from band iron in the required length of the cast and holes drilled in them so that they fit exactly to the pins (fig. 5). Since the muscles are not able to bring the fragments together after the cast is finished, the distance of the holes in the splints must be kept so that the fragments are in proximity. After the splints are applied to the pins, they are fastened with screws which prevent them from slipping off the pins; then the projecting parts of the pins are removed (fig. 5 and 6). These screws are of aluminum and are deliberately made bulky to serve another important purpose, namely to give the pins a solid foundation in the cast. This, together with the perfect fit of the pins in the bone, and the proximity of the fragments are the three essential points of this method. The cast is then finished with more circular bandages (fig. 6) and the margins are cut to fit the limb and give free movement to the joints.

In animals in which fractures of the phalangeal bones were treated by this method, the pins were driven through the uninjured metacarpus or metatarsus, respectively, and a U-shaped walking splint (fig. 24, 2) attached to them instead of lateral splints.

Still another variation of this method was used in the treatment of fractures of the olecranon process, since the triceps brachii muscle, attached to the small proximal fragment, pulls the fragment away from the rest of the bone as soon as the animal tries to put weight on the limb. The pins, consequently, were placed in the usual manner but, to counteract the pull of the muscle, splints which could be shortened after they were applied to the pins were used. This way, a considerable pressure was applied to the fracture.

The strength of the triceps brachii muscle is shown in the case of a 3-year-old Thoroughbred which had a total fracture of the olecranon process caused by the kick of another horse. To prevent splitting of the small proximal fragment, a Steinmann pin was used which was 6 mm. in diameter instead of the usual 8-mm. pin. After the operation, the horse put its full weight on the limb and everything appeared to be perfect. Four days later, a slight lameness was noticed which increased the next three days.

A radiograph showed that the 6-mm. steel pin had bent so that the fragments were more than 1 cm. apart. The animal was again cast, the bent pin removed, and an 8-mm. pin inserted. Also, the bulky screw, so useful in other places, had done some damage to the skin on the thorax, medial to the elbow joint. The point of the pin was, therefore, made removable so that after the pin was in place and the splint applied, a flat coin-shaped screw could be attached to prevent the splint from slipping off. This successfully prevented further damage.

Aftertreatment and Results.—Forty-three animals were treated with transfixa-

tion casts. Due to various mistakes in the beginning, as mentioned above, 5 animals were killed because of lameness—1 horse with an open metacarpal fracture because it developed septicemia. However, 37 animals, including 8 in which a joint was involved, recovered completely; 1 horse after several weeks of suffering from a sequestering pin channel caused by a hot pin.

DISCUSSION

Many different ways have been tried in the past for bone fracture treatment in large animals. Well-padded plaster of paris casts, wooden and iron splints, open surgical fixation with plates and screws—but, so far, without satisfactory results. Most of these methods neglect the basic principles of fracture treatment or are too complicated. Exercise is essential and an injured limb will only be used by the animal if this does not cause pain. This, consequently, demands proper immobilization of the fracture for a sufficient length of time. This report shows that fracture treatment is not only possible for the practitioner but also very satisfactory and economical.

No radiographs have been included and anatomical details are only briefly outlined. Further reports on both subjects are to follow. Fractures of the sesamoid bones have been treated accordingly.

The few cases reported show that there is a wide variety of possibilities for the use of the described techniques. No rigid scheme can be followed, since every fracture requires an individual way of application to make it most successful and least dangerous. The cast and the pins proved harmless; for, when the healthy parts of the limb are kept healthy, the fracture will heal by itself.

Early Removal of Wound Dressings

Wounds from which all dressings were removed after 24 hours seemed to heal faster, and with less inflammation, than similar wounds covered with sterile dressings for the usual eight days. Surgical wounds on the chest and abdomen, including those from appendectomies and inguinal hernias, were compared. Other advantages were economy in surgical dressings, in professional time, and avoidance of irritation from adhesive tape.—*J.Am.M.A., Feb. 18, 1956.*

Use of Curare to Reduce Luxation

In October, 1955, an anterior luxation at the second row of carpal bones occurred in a 7-month-old filly, with the volar surface of the distal row riding upon the dorsal surface of the proximal row.

Under general anesthesia, traction and manipulation resulted in no progress in two hours, apparently because the muscles held the carpal rows against each other so tightly that they moved simultaneously. D-tubocurarine chloride was then given intravenously until abdominal breathing appeared (12 mg.). During the resulting relaxation, reduction was accomplished without traction by flexing the carpus and pushing the lower row into place. A plaster cast, applied from the hoof to the elbow, produced discomfort at three and one-half weeks and was removed. The filly seemed to be doing nicely.—*Vet. Scope, Univ. of Missouri, Jan., 1956.*

Phosphorus for Pregnant Ewes

In a nine-year study, ewes fed a ration low in phosphorus (ave. 0.1 to 0.2%) had a lamb mortality during the two days after birth of 28 per cent; when bone meal was added (ave. phosphorus 0.188%), the mortality was 12 per cent; when alfalfa hay was fed alone (ave. phosphorus, 0.196%), the mortality was only 4 per cent. The inadequate milk flow on low phosphorus may have contributed to the higher mortality. Ewes on the low phosphorus ration lost about 7.5 lb. more during gestation and lactation than when fed the bone meal ration.—*AFMA Nutr. Abstr., March, 1956.*

Starch sponges, widely used by surgeons as a hemostatic agent, are proposed for use as carriers for medicaments for slow release within the body. Made from ordinary food-quality starch, the sponges are readily, slowly, and completely absorbed.—*U.S.D.A., April 19, 1956.*

New Injector to Minimize Pain.—A two-year trial with the "presto injector," a spring-driven syringe with a small needle for subcutaneous or intramuscular injections, indicates that 80 per cent of persons injected feel no pain. This is due chiefly to the high velocity of the penetrating needle. It is not a time-saving device.—*J.Am.M.A., April 14, 1956.*

Fracture of the Fibula in the Horse

R. L. LUNDVALL, D.V.M.

Ames, Iowa

FOR THE PAST three years, at the Stange Memorial Clinic at Iowa State College, an increasing number of cases of fracture of the fibula in horses has been observed. Most of these have been presented for the diagnosis of lameness of obscure origin, and the majority of them have been in the Standardbred horse. A review of 38 consecutive cases revealed 3 American Saddlebred horses, 2 Thoroughbred, 2 Palomino, 1 Shetland pony, and 30 Standardbred horses affected. A search of the literature revealed no mention of fracture of the fibula as a cause of lameness.

The history presented with these cases generally follows a typical pattern. Usually, the lameness appeared suddenly, following a race or a fast workout. Several animals developed the lameness during a race. In only two instances was there a history of a definite injury; 1 horse was known to have been kicked by another and 1 became lame following casting. After a varying period of rest, the animal would improve and be brought up to racing form again, only to break stride or to pull out on the turn. A short period of lameness would follow each fast workout or race.

Myositis, especially of the lumbar and gluteal muscles, was seen in a number of instances, and the animals were frequently presented for diagnosis or treatment, or both, with the request that they be treated for a "sore back" or "kidney trouble." In some animals, the myositis had persisted for several months. The animals were never able to race in as good time as they had shown previous to the appearance of symptoms.

Clinically, the symptoms are rather vague, as the animal is rarely lame unless it is trotting or pacing at top speed. In 3 cases, lameness was noticed if the animal was pivoted sharply on the affected leg. Several animals showed a moderate to

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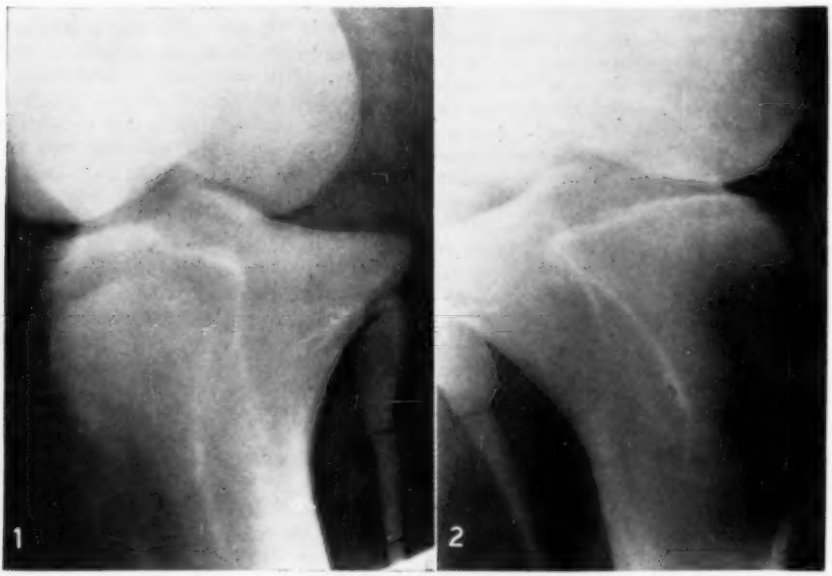

Fig. 1—Radiograph showing two fractures of the fibula of a horse.

Fig. 2—Radiograph showing single fracture of the fibula of a horse.

severe myositis involving the lumbosacral or gluteal muscles or both groups.

In each instance where fracture of the fibula was suspected, a radiograph was taken to confirm the diagnosis. The site of the fracture was nearly always 1 to 3 inches below the head of the fibula. In 7 animals, the fracture was double (fig. 1), one fracture occurring 1 to 2 inches below the head of the fibula and a second fracture 1 to 2 inches below the first. In 10 animals, the fracture was bilateral; in 14, it was of the right fibula and, in 14, the left. It was generally a clean fracture, at right angles to the long axis of the fibula. Two fractures were seen with small fragments lying in apposition to the main line of the fracture. Although one radiograph revealed a healed fracture of the fibula, in most instances the fracture showed little tendency toward callus formation. This tendency not to heal is shown by the fact that most of the radiographs were taken from three to six months after the lameness was first apparent and, with the one exception, no evidence of callus formation was seen. Two animals presented for re-examination four months after the original radiographs were taken showed no evidence of callus formation.

The treatment employed in animals with fracture of the fibula has been symptomatic. The muscles affected with myositis have been injected with a counterirritant or with a hydrocortisone preparation. The area around the site of the fracture has also been injected with a counterirritant. Total rest of the animal for at least 90 days has been advised. Some temporary benefit, especially relief of the myositis, has been obtained. However, several animals for which this treatment has been employed have been presented for follow-up radiographs, and the fracture still showed no evidence of callus formation.

CASE REPORTS

Case 1.—A 3-year-old Standardbred mare was brought to the clinic on Dec. 30, 1955. According to the history, as given by the owner, the mare was sound until, in June of 1955, she suddenly became lame in a race and "could hardly get off the track." Lameness was then severe for about three weeks. She was thought to be sore at the back of the fetlock and lame in the stifle area. Some soreness was noticed over the lumbar area. The mare was started in 15 "heats" following the first appearance of the lameness but was unable to "place," and she was always lame for a short period following a race.

On clinical examination, no lameness could be elicited but deep palpation of the lumbar area produced pain. Radiographs revealed a simple fracture of the left fibula.

Case 2.—A 3-year-old Standardbred mare was brought to the clinic on Nov. 10, 1955. According to the owner, she had raced well in 1954 but, in 1955, she had "hitched" and broken her stride when going around the turns, especially on small tracks.

Clinical examination revealed that she was sensitive to deep palpation over the lumbar area. Lameness was shown when the animal was pivoted sharply on the left hindleg but not when pivoting on the right hindleg.

Radiographs showed a fracture of the fibula in each leg, "pulled" tibial tuberosities (widened by being partially separated due to traction from patellar ligaments), and gonitis.

The area around each fracture and the lumbar area were injected with a counterirritant. The owner was advised to rest the animal for six months.

On Jan. 11, 1956, when the mare was readmitted to the clinic, radiographs revealed no evidence of callus formation.

The predilection of this condition to affect Standardbred horses might be explained in several ways. In the case of "pacers," the hopples might cause the fracture. Holding the animals back to keep them from breaking gait or lunging and jumping at the start of the race might be the cause. The conformation of the Standardbred might also be a factor. Poor quality of bone resulting from poor nutrition or faulty metabolism is probably a contributing factor in most instances of fracture of the fibula.

SUMMARY

1) Fracture of the fibula in Standardbred horses is a common, although frequently overlooked, cause of lameness.

2) The case histories given by the owners of horses with fractures of fibulas are similar. Obscure lameness shown at top speed, breaking stride at the turn, and recurrent lameness and soreness over the back following racing should lead one to check for this condition.

3) Myositis involving the lumbar or

gluteal muscles is commonly seen and is often persistent.

4) The fractures show little tendency to heal.

5) Animals may be raced with fractured fibulas, but they rarely attain the speed shown prior to the injury.

Calf Bone for Bone Grafting in Man

Bone taken from calves weighing about 300 lb. have been used for bone grafts in 12 patients. When secured, the bone is placed in cow plasma solution containing antibiotics and is refrigerated about six months before being used. As the graft is absorbed, the fine fibrile structures serve as a scaffolding on which the patient's own bone cell can build.

The chief advantages of calf bone is that it is available in unlimited quantities.—*Northwestern Univ. News Service, Chicago, Ill., Dec. 7, 1955.*

Mineral Deficiencies and Sterility.—Chemical analysis of soil and hay samples on 57 farms indicated a direct relationship between the phosphoric acid content of the fodder and the calving interval and insemination index of the cows fed.—*Vet. Bull., Feb., 1956.*

Abortion in Cows Caused by Fungi

Of 2,000 aborted bovine fetuses, in Holland, 25 appeared to be infected with fungi. Most abortions occurred in Brucella-free herds, following a wet summer. Nearly half of them occurred after the herd had been fed moldy hay. None of the cows showed illness. The fungi isolated were *Aspergillus fumigatus* (18), *Absidia ramosa* (5), *Mortierella polycephala* (1), and Mucor sp. (1). —*Vet. Bull, April, 1956.*

Releasing a Stallion with Mares

Since the presence of rams is reported to increase the ovarian activity of ewes, and since the conception in ponies running wild is much higher than in stabled horses, it was decided, in South Africa, to release a stallion with a retroverted penis with Thoroughbred mares two months before the breeding season. Results were noted.

In 1953, all of the 14 mares in the group conceived during the first two breeding months, 11 of them during the first heat period. Estrus varied from five to 22 days (av. 11 days). In 1954, under similar circumstances, 8 of 9 mares conceived readily and estrus ranged from two to 20 days (av. 9 days).

The physiological effect of the courtship with the stallion is believed to have provoked earlier estrus and earlier breeding.—*J. South Afric. Vet. M. A., March, 1956.*

Retroversion of Penis in a Stallion

In preparing a stallion to be released with mares as a teaser, the animal is anesthetized, cast on its back, the penis extended, a circular incision of the skin made at the external preputial ring, a triangular piece of skin removed in the perineum 6 inches above the scrotum, the penis drawn back through this opening, and the skin on the penis sutured to the triangular opening. During erection, the penis is then directed ventroposteriorly.—*J. South Afric. Vet. M.A., March, 1956.*

Sex Diagnosed from Amniotic Fluid

In most mammals, males have the sex chromosome constitution XY while females have XX. There is a sex difference in the number of cells with chromocenters. Amniotic fluid contains such cells and sex can be diagnosed when it is centrifuged, smeared on slides, fixed in alcohol-ether, and stained with feulgen and fast green. Sex can thus be determined in the human fetus at the sixth and seventh months of gestation. It may be possible to apply this method to domestic animals.—*Science, March 30, 1956.*

Estrus Regularity and Conception

Regular ovarian examinations on half of 400 dairy cows revealed that "silent" estrus was common after parturition. Rectal palpation revealed that by 90 days postpartum, 97 per cent of the cows had actually experienced estrus but only 93 per cent had shown it.

Of 500 estrous periods observed, 60.4 per cent were at intervals between 18 and 25 days; 37.4 per cent were over 25; and 2.2 per cent were less than 18 days. The conception rate in cows with irregular estrous periods was not decreased except when the intervals were short and when the ovaries were cystic.—*J. Dai. Sci., April, 1956.*

A Whey-Plate Test for the Diagnosis of Bovine Brucellosis

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SEROLOGICAL MILK TESTS for brucellosis have been suggested as substitutes for blood tests. The brucellosis-ring test, as used in this country,[1] has proved highly efficient in detecting infection when used as a composite test on a group of milking cows. Its efficiency in the individual cow has not yet been established, but a dilution technique for the detection of infected individuals has been described.[2,3] Reported nonspecific reactions, due to the presence of colostrum, drying-off secretions, and abnormal milk,[4] could be eliminated by diluting the sample with pooled milk from not less than 3 known negative cows. It has been suggested[11] that heating the sample would eliminate nonspecific reactions. It woud appear, therefore, that a modification of the ring test might prove effective in detecting the infected individual, thus eliminating much of the blood testing. The reports to date, however, have not been of sufficient magnitude to warrant its widespread use on a routine scale.

The whey-agglutination test, using the tube technique, suggested[5] as a means of detecting udder infection showed promise but did not appear sensitive enough for routine adoption. A milk-plate test[6] and the efficiency of blood, whey, and whole milk tests[7] for ascertaining the brucellosis status of cattle have been discussed. A comparison of the "skimmed milk fast agglutination test and milk serum fast agglutination test"[8] showed that while the skimmed milk test was less satisfactory the agreement was close enough to warrant its use because of being less complicated.

The use of a whey-plate test with ring-test antigen for the detection of brucellosis has been suggested.[9] This paper is a further report on these investigations.

METHODS

The blood-agglutination test was conducted by the tube technique, using antigen furnished by the Agricultural Research Service. Milk samples were concurrently obtained from all cows with blood reactions greater than incomplete at 1:50. In some herds, milk was obtained from all of the cows, regardless of blood reaction. In others, random samples were obtained from blood-negative animals as well as reactors. Whey was obtained by adding 2 drops of rennet to approximately 10.0 ml. of a composite sample of milk from each quarter and incubating overnight at room temperature or for two hours at 37 C. The whey-plate test was conducted in a manner similar to the blood serum-plate test, using 0.08, 0.04, 0.02, and 0.01 ml. of whey with a drop of antigen furnished by the Agricultural Research Service. Readings were made in five to six minutes and recorded as 1, 2, 3, or 4, representing 0.08, 0.04, 0.02, and 0.01 ml. of whey, respectively. Milk from cows with blood reactions 1:100 or greater and from whey reactors was inoculated into guinea pigs to determine if Brucella were present. When it became apparent that there was a high percentage of agreement between blood and whey tests, guinea pig inoculation was confined to those cases where the tests were not in agreement.

RESULTS

A total of 5,062 animals were blood and whey tested simultaneously. Publication of complete protocols is not possible but cross sections are shown (tables 1 and 2). These cross sections consist of entire blocks of data taken from the protocols and are representative of each group. Not included are any of the large number of blood- and whey-negative animals; these are contained in a summary (table 3). Table 1 consists of animals negative to the whey test; table 2 of those positive. Included in table 1 are 2 whey-negative animals, positive on milk culture, in which the serum titer is 1:100; one of these was from a calfhood-vaccinated the other from a nonvaccinated animal. Both were from infected herds with maximum blood titers of 6,400 in one herd and 12,800 in the other. Table 3 is a summary of the correlation of blood and whey reactions as related to the recovery of

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TABLE 1—Correlation of Serum Titers, Milk Cultures, and Maximum Herd Serum Titers in Whey-Negative Animals (a Cross Section of Results)

ST	MC	MHT	ST	MC	MHT	ST	MC	MHT
100	—	100	100	—	6,400	100	—	800
100	—	100	200	—	6,400	100	—	200
100	—	100	100	—	6,400	100	—	200
100	—	100	100	—	100	100	—	200
100	—	200	100	—	100	100	—	6,400
100	—	200	100	—	100	100	—	6,400
100	—	200	100	—	100	100	—	6,400
100	—	200	100	—	100	100	—	6,400
200	—	200	200	—	12,800	100	+	12,800
i*/200	—	6,400	200	—	12,800	100	—	6,400
200	—	12,800	100	—	12,800	100	—	6,400
100	—	200	i/200	—	12,800	100	—	1,600
100	—	200	i/200	—	12,800	200	—	6,400
200	—	6,400	100	—	12,800	100	—	6,400
100	—	6,400	100	—	12,800	100	—	6,400
100	—	6,400	200	—	12,800	100	—	6,400
100	+	6,400	100	—	12,800	100	—	6,400
100	—	6,400	200	—	12,800	100	—	6,400
100	—	6,400	100	—	100	100	—	6,400
100	—	6,400	100	—	100	100	—	6,400

ST = serum titer, MC = milk culture, MHT = maximum herd serum titer.
*Incomplete.

Brucella abortus from milk. There was 96 per cent agreement in the two serological tests. Where there was disagreement, the whey test proved, by statistical analysis, to be more effective in detecting infection than the blood test.

The Interpretation of Whey Titers.—The summary of results (table 3) includes cows with whey titers of 1, 2, 3, and 4, raising the question of the significance of low whey titers. An analysis of the distribution of whey titers in the two groups of whey-positive cows is shown (table 4).

TABLE 2—Correlation of Serum Titers, Milk Cultures, and Maximum Herd Serum Titers in Whey-Positive Animals (a Cross Section of Results)

ST	MC	MHT	ST	MC	MHT	ST	MC	MHT
3,200	+	6,400	800	+	6,400	400	+	3,200
6,400	+	6,400	1,600	+	6,400	400	+	3,200
400	—	6,400	800	+	6,400	800	+	3,200
200	+	6,400	50	—	800	i/200	—	200
1,600	+	6,400	i/100	+	3,200	i/200	—	6,400
400	+	6,400	3,200	+	3,200	1,600	+	1,600
3,200	+	6,400	400	+	3,200	400	—	6,400
25	—	6,400	200	+	200	1,600	+	6,400
3,200	+	6,400	i/200	—	1,600	800	+	6,400
50	—	6,400	100	+	1,600	6,400	+	6,400
3,200	+	6,400	400	—	1,600	3,200	+	6,400
1,600	+	6,400	400	+	1,600	100	+	6,400
6,400	+	6,400	800	+	1,600	100	+	6,400
1,600	—	1,600	1,600	+	1,600	100	+	6,400
1,600	+	1,600	100	—	1,600	6,400	+	6,400
800	+	1,600	200	+	1,600	800	+	6,400
i*/200	—	1,600	1,600	+	3,200	800	+	6,400
25	—	100	3,200	+	3,200	6,400	+	6,400
i/200	+	12,800	3,200	+	3,200	400	—	6,400
100	—	12,800	3,200	+	3,200	800	+	800
6,400	+	12,800	400	—	400	6,400	+	6,400

ST=serum titer, MC=milk culture, MHT=maximum herd serum titer.
*Incomplete.

Duration of Whey Titers Following Vaccination of Lactating Animals.—A series of whey titers was followed in cows vaccinated with *Br. abortus*, strain 19, while lactating. The herd consisted of approximately 40 milking cows, all calfhood vaccinated. Four cows were shedding virulent *Br. abortus* in the milk. Whey tests were conducted periodically for 26 weeks following vaccination. By the ninth week, all were negative, except the 4 shedders of virulent *Br. abortus*. At 26 weeks, the 4 shedders still reacted while the others remained negative; the blood titers, although they had started to recede in the noninfected animals, were still in the positive range. Additional evidence on the duration of whey titers following adult vaccination was obtained when a herd of over 400 milking cows was both blood and whey tested. Records were not available as to the dates of vaccination. The blood test showed 15 per cent reactors; the whey test only 4 per cent, with an additional 3 per cent in a suspicious range.

Discussion

During the survey, a few herds were retested and it was observed that the percentage of infection in a herd did not increase when animals shedding virulent *Br. abortus* from the udder were permitted to remain in the herd. In the area, vaccination alone was used to control brucellosis; little or no blood testing and removal of reactors was practiced and there had been no restrictions on bringing in infected animals. Under these conditions, the amount of infection encountered (4.3%) was considered low and could be called residual, since the spread was not active and there was no clinical evidence of acute brucellosis. Much of the residual infection was localized in the mammary gland, a fact that constitutes the most important feature of brucellosis today. Since the objective in the brucellosis program is eradication rather than control, frequent testing is desirable. One of the deterents in such a program has been the industry's objection to the labor and cost of obtaining blood samples, especially in areas where large dairy herds are maintained and the turnover in cattle is heavy. It has also become apparent that, with the widespread use of vaccine, especially when used in late calfhood or in adults, there remain a number of residual titers resulting from vac-

cination that can not be distinguished from titers caused by virulent infection.

From this investigation, it would appear that milk testing of individual cows could be substituted for much of the blood testing in a brucellosis eradication program. The data indicate that infection localized in the mammary gland is accompanied by a concentration of agglutinins in the whey. Others[10] have concluded that there was distinct participation by the udder in the production of agglutinins when the mammary gland was invaded by living or flooded by dead bacteria. The outstanding feature in the present survey was the absence of demonstrable agglutinins in the whey when there was no apparent localization of *Br. abortus* in the udder. Agglutinins were demonstrated in whey when the organism could not be isolated from milk; however, this invariably occurred in herds where the existence of infection was confirmed by blood testing and isolation of the organism from other animals. Some nonshedding whey reactors could also be accounted for by the limitations of our methods of isolation, intermittent shedding, or localization of a virulent strain in other organs.

On a few occasions, false positive whey reactions were encountered. These were in known negative herds, in cows that had calved within a week and which subsequently reverted to negative. It is suggested, therefore, that whey-positive cows that have calved within two weeks be retested or that the results be confirmed by the blood test. The presence of 2 cows in the blood- and whey-negative group, which were shedding Brucella in their milk, is not significant since both were in known infected herds that would be subject to retest. Also, because of the nonexplosive nature of brucellosis in a vaccinated herd, the accidental failure to remove an infected animal does not have the same disastrous

TABLE 3—A Summary of the Correlation of Blood Serum and Whey Tests

	Numbers	Shedders*
Blood − whey −	4,591	2
Blood + whey +	263	135
Blood + whey −	51	0
Blood − whey +	157	24†
Total	5,062	161

Blood + = 1:200 and over; whey + = 0.08 ml. and over. Percentage of agreement = 96.
*From the first 2,000 samples only. †Based on the culture of 108 samples.

TABLE 4—The Distribution of 420 Positive Whey Titers

	Blood-positive, whey-positive animals				
Whey titer	1	2	3	4	Total
Numbers	12	4	10	237	263
	Blood-negative, whey-positive animals				
Whey titer	1	2	3	4	Total
Numbers	46	18	19	74	157

Whey titers less than 4 were invariably in infected herds.

results that could be expected in a susceptible group. Since the status of the herd, rather than of the individual, is the important factor in an eradication program, the maximum herd titers were taken into consideration for the purpose of interpreting the significance of low titers and milk culture. For example, in the whey-negative group (table 1), the high maximum herd blood titers in the 2 cows with positive milk cultures could indicate recent infection. In the whey-positive group (table 2), a significant number of high whey titers were observed when milk cultures and blood titers were negative. These were in herds with high maximum herd titers, suggesting that the whey test may be more efficient than the blood test, even in the absence of udder infection. With respect to the significance of low-titer whey reactions, it would appear that a titer of 4 (0.01) indicates an infected animal, unless it had been recently vaccinated, and that the other titers are transitory, either ascending or receding, and should be regarded as suspicious. This is based on the fact that low whey titers were invariably found in herds where maximum herd titers were high and definite evidence of infection existed in other animals. Low whey titers were not observed in negative herds.

The data on the duration of whey titers following adult vaccination, although limited, suggest that the whey test will differentiate between a reaction caused by vaccine and a reaction caused by virulent infection. The rapid recession, after vaccination, of whey titers as compared to blood titers would serve to differentiate blood titers caused by vaccination from those caused by virulent infection.

SUMMARY AND CONCLUSIONS

A whey-plate test similar to the blood serum-plate test for bovine brucellosis is described. The tests were conducted concurrently on blood and whey samples from 5,062 cows. There was 96 per cent agree-

ment but, where there was disagreement, the whey test appeared to be more efficient in detecting infection.

It is concluded that the whey-plate test could be safely substituted for the blood test for the detection of brucellosis in lactating cows.

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Recurrent Rabies in a Rabbit

A rabbit experimentally infected, subcutaneously, with the Flury strain of rabies virus recovered from an epileptiform crisis following the inoculation, then had a recurrence three months later. Guinea pig inoculations with brain material from the rabbit produced typical paralytic rabies.—*Vet. Bull., April, 1956.*

Rabies in a Rat.—A rat which had bitten a boy, in Omaha, was captured. When it died, its brain revealed Negri bodies. This is the second confirmed case of rabies in a rat in the United States in the past six months.—*Pub. Health Serv., April 21, 1956.*

Anthrax Contracted from Buffalo

Two men who recently assisted in butchering a sick buffalo, in New Mexico, became ill with a high fever, typical anthrax abscesses on their hands, and regional lymphadenopathy. Both responded to antibiotic therapy. Four buffaloes in the herd had recently died and anthrax organisms were recovered from the brain of one. (This head had been saved by the Indians for a ceremony.)—*Pub. Health Serv., April, 1956.*

Chlorhexidine for Teat Cup Decontamination.—A new disinfectant (chlorhexidine) had a much higher bacteriostatic effect than the equivalent concentration of sodium hypochlorite for teat cup decontamination. It was also more active than a quaternary ammonium compound against most of the species of microorganisms.—*J. Milk and Food Tech., April, 1956.*

Serological Test for Tuberculosis

A slightly modified hemagglutination test was satisfactory for the diagnosis of tuberculosis in carnivores. The titers were interpreted as follows: 1:40, doubtful; 1:80, suspicious; and higher titers, positive. Results differed from the tuberculin tests in 2 of 13 dogs but necropsy confirmed the findings of the hemagglutination test. Observations on 2 artificially infected dogs also supported the test.—*Vet. Bull., April, 1956.*

Experimental Use of Novobiocin

Novobiocin (produced from *Streptomyces niveus*), one of the newer antibiotics, is rapidly absorbed following ingestion, and high serum concentrations are usually promptly attained. It is highly effective against gram-positive cocci, including most strains of *Staphylococcus aureus*. It apparently causes no gastrointestinal side-effects in man but may cause dermal reactions. It was effective in 30 patients with bacterial pneumonia but of little value in amebiasis.—*Antibiot. Med., April, 1956.*

Bracken Poisoning in Ruminants.—Experiments on sheep, using water extracts of bracken fronds, indicate that the toxic factor for the bone marrow is a soluble, small-molecular substance, distinct from thiaminase.—*Vet. Bull., April, 1956.*

Studies on Therapy of Swine Enteritis
I. The Effect of SMP-1 on Experimental Salmonellosis

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A NEW DRUG, SMP-1, was used to treat experimental swine enteritis. This was a synthetic compound patterned after one of the antibiotics. It had been found to be effective against a large number of bacterial organisms *in vitro* and against several *in vivo*. Its toxicity was apparently low and it promised to be less expensive than the antibiotics.

LITERATURE CITED

Salmonella choleraesuis has been considered by some as a cause of enteric trouble in swine; others do not consider it of primary importance. The true role of *S. choleraesuis* in causing swine enteritis still appears to be uncertain. Some investigators have not been able to consistently cause enteritis by feeding pure cultures of these microorganisms to healthy swine.

Gwatkin and Moynihan[1] employed 14 strains of *S. choleraesuis* under various conditions and concluded that a new concept is needed where this microorganism is concerned. McNutt and Dacorso[2] were of the opinion that *S. choleraesuis* is the cause of infectious necrotic enteritis. Levine *et al.*[3] isolated *S. choleraesuis* from only 13 per cent of 227 swine at necropsy and from only 17 per cent of those showing gross intestinal lesions of the same group.

Doyle and Walkey[4] fed viscera containing *S. choleraesuis* from 16 animals with field cases of nondysentery enteritis to 27 cholera-vaccinated shoats without causing any significant effect. Some of the same viscera was fed to 6 unvaccinated shoats; all of which died. Six strains of *S. choleraesuis* which were apparently harmless when fed in viscera to cholera-vaccinated shoats were pathogenic when fed in cultures to other cholera-vaccinated shoats. These results suggest that the microorganism may act differently in culture than it does in tissue. Murray *et al.*[5] reported that they consistently caused infectious enteritis by feeding cultures of *S. choleraesuis* isolated from animals with field cases of the disease.

Enteritis associated with this microorganism has been treated in various ways, depending upon varying opinions held at different times. Some earlier reports dealt with nicotinic acid in the belief that swine enteritis may be primarily pellagrous in nature. Fairbanks and Curzon,[6] Davis and Freeman,[7] and Davis *et al.*[8] concluded that nicotinic acid was therapeutically ineffective and that more investigation was needed. Nicotinic acid and other nutritional factors are probably more important in aiding in recovery than as causative factors.

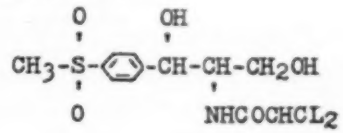
The sulfonamides have been tried. In 1942, Kernkamp and Roepke[9] reported that sulfaguanidine was of definite value in treating necrotic or infectious swine enteritis. Again, in 1945, Kernkamp[10] reported that sulfaguanidine was effective and, also, that sulfasuxidine and sulfathalidine were used with considerable success.

More recently, there have been reports of successful treatments of infectious swine enteritis with the antibiotics. Graham *et al.*[11] reported bacitracin to be highly effective in 10,000-unit doses daily for six days. According to Lawhon,[12] streptomycin with citralka liquid was effective in bacillary diarrheas that he had treated. There is some uncertainty regarding the exact nature of the enteritis concerned in the foregoing reports.

MATERIALS AND METHODS

The compound used in these trials was designated as SMP-1, an experimental drug which is chemically similar to chloramphenicol.

Chemical Properties.—SMP-1 is *DL-threo*-1-(*p*-methylsulfonylphenyl)-2-dichloroacetamido-1, 3-propanediol. It is a crystalline, optically inactive, white, stable, and odorless compound. It has a slightly bitter taste. It is soluble in water to the extent of about 0.1 per cent at 25 C. The pure compound has a melting point of 180 to 181 C. The empirical formula is $C_{12}H_{15}Cl_2NO_5S$. The structural formula is



DL threo form

The structural formula is similar to that of chloramphenicol.

Chloramphenicol is obtained either from *Streptomyces venezuelae* or by synthesis. It is effective against both gram-positive and gram-negative or-

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Taken from a thesis "Experimental Treatment of Swine Enteritis" submitted (by Hurst) to the faculty of the Graduate School, Purdue University, in partial fulfillment of the requirements for the M.S. degree, August, 1954.

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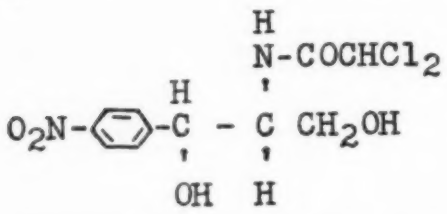
ganisms, rickettsias, and some viruses. It is D(−) threo-1-*p*-nitrophenyl-2-dichloroacetamido-1, 3-propanediol. It is an optically active (dextrorotary) compound which has a rotation of $[\alpha]_D^{25} = -25.5$ degrees (ethyl acetate). Chloramphenicol is colorless, bitter, and crystalline in character. The crystals are elongated plates or fine needles. It is soluble in water to the extent of 0.25 per cent at 25 C. The pure compound has a melting point of 149 to 153 C. The empirical formula is $C_{11}H_{12}Cl_2N_2O_5$. The structural formula for chloramphenicol is



Experimental Procedure.—Twenty-five, cholera-vaccinated feeder shoats were used in two experiments to test the efficacy of SMP-1 and to compare its action with that of chloramphenicol in treating enteritis following the feeding of *S. choleraesuis* cultures. After a 24-hour fast, each of the pigs was orally exposed to 100 cc. of a 24-hour broth culture mixed with an equal volume of prepared gastric mucin.

The medication was given in the feed once a day.

RESULTS

Experiment 1.—Table 1 shows the effect of SMP-1 when it was administered both prior to and following oral exposure to the culture.

TABLE 1—Effect of SMP-1 Given Prior to and After Exposure to Salmonella Choleraesuis

Pen	No. of pigs	Dose of SMP-1	Length of treatment	Results
1	5*	None.	.....	All became ill and scoured, none died.
2	5	150 mg./kg./day.	5 days prior, 7 days after.	Little or no illness was observed.
3	5*	150 mg./kg./day.	5 days after.	Complete recovery.†

*Diarrhea, nauses, and inappetence were evident in all pigs in 12 to 14 hours.
†No symptoms were evident after the fourth treatment.

Experiment 2.—SMP-1 was compared with chloramphenicol as a treatment for experimental salmonellosis. The results are shown in table 2.

The pigs in pens 1, 2, and 3 all scoured for 12 days. None died.

The animals in experiment 2 which did not respond to chloramphenicol were treated with the new drug. The results are shown in table 3.

TABLE 2—A Comparison of SMP-1 with Chloramphenicol in Treating Experimental Salmonellosis

Pen	No. of pigs	Treatment	Length of treatment	Results
1	3	Chloramphenicol (50 mg./kg./day).	5 days.	Scours continued.*
2	3	Chloramphenicol (10 mg./kg./day).	5 days.	Scours continued.*
3 (control)	3	None.	.....	Scours continued.
4	3	SMP-1 (50 mg./kg./day).	5 days.	Scours stopped.†
5	3	SMP-1 (10 mg./kg./day).	5 days.	Scours stopped.†

*Scours continued until the pigs were treated with SMP-1 five days after the last SMP-1 treatment of pens 4 and 5.
†Scours stopped after the fourth treatment.

TABLE 3—The Results of Re-treating Pigs with SMP-1

Pen	No. of pigs	Treatment (SMP-1)	Length of treatment	Results
1*	3	50 mg./kg. of body wt.	4 days.	Stopped scours.
2*	3	50 mg./kg. of body wt.	4 days.	Stopped scours.
3 (control)	3	None.	.....	Continued to scour for 12 to 14 days.

*These were pens 1 and 2 in experiment 2. Scours stopped after the fourth daily treatment.

SUMMARY

SMP-1 was effective in treating experimental salmonellosis.

The drug also had a preventive effect upon *Salmonella choleraesuis* infection when given to pigs prior to exposure.

It completely stopped the scouring while chloramphenicol had little or no effect.

It stopped the scours in pigs that were previously and unsuccessfully treated with chloramphenicol.

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II. The Effect SMP-1 on Transmissible Gastroenteritis of Swine

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Transmissible gastroenteritis was the only virus disease for which SMP-1 was tried. It was hoped that this compound might have some therapeutic value where others had failed.

LITERATURE CITED

Previous investigators have shown that therapy was of little value in controlling transmissible gastroenteritis of swine. In 1946, Doyle and Hutchings[1] reported that pigs affected with this disease failed to respond either to sulfathalidine or penicillin. Bay *et al.*[2] showed that various sulfonamides (sulfadiazine, sulfamethazine, and sulfathalidine) and antibiotics (aureomycin,® circulin, and streptomycin) were of no value. Earlier, Bay *et al.*[3] found that normal and hyperimmune serums had no effect upon the course of the disease when given *per os* or parenterally.

As early as 1945, Doyle[4] recommended that unexposed litters of pigs be kept at a safe distance from affected litters as a means of preventing the spread of this disease, a measure of control which is still considered most effective.

MATERIALS AND METHODS

Twenty-one, 3- to 5-day-old pigs were used in three controlled experiments. The pigs were kept semi-isolated in all-metal wire cages which had been cleaned and sterilized by boiling. Promptly after being received from a pig hatchery, the pigs were divided into their respective groups and placed in the cages.

Exposure was made by giving orally a suspension of finely minced intestine and contents from animals known to have transmissible gastroenteritis.

These pigs were maintained on a diet of 6 to 8 oz. of whole, homogenized cow's milk given twice daily.

In all three experiments, the drug was given by means of a small plastic stomach tube and a glass syringe. The saline solution-suspension contained 0.4 Gm. of the drug in each cubic centimeter.

EXPERIMENTAL PROCEDURE AND RESULTS

Experiment 1.—Symptoms were allowed to develop in all of the exposed pigs before treatment was started. Table 1 shows the results.

TABLE 1—SMP-1 Treatment of Transmissible Gastroenteritis in Pigs After Symptoms Were Observed

Pen	Pigs exposed	Dose of SMP-1	Length of treatment	Results*
1	2	50 mg./kg./day	2 days	Died
2	2	100 mg./kg./day	2 days	Died
3	1 (control)	None	.....	Died

*All 5 pigs died by the fifth day.

Experiment 2.—The initial dose of the drug was given 30 to 40 minutes prior to exposure to the virus. Table 2 shows the results.

TABLE 2—SMP-1 Treatment of Transmissible Gastroenteritis in Pigs 30 to 40 Minutes Prior to Exposure

Pen	Pigs exposed	Dose of SMP-1	Length of treatment	Results*
1	2	50 mg./kg./day	3 days	Died
2	2	100 mg./kg./day	3 days	Died
3	3 (controls)	None	.....	Died

*All of the controls died by the fourth day. All of the treated animals lived longer. The last one died eight days after exposure.

Experiment 3.—The initial dose of SMP-1 was given two hours prior to oral exposure to the virus. Table 3 shows the results.

From the Department of Veterinary Science, Purdue University, Lafayette, Ind.

Taken from a thesis "Experimental Treatment of Swine Enteritis" submitted (by Hurst) to the faculty of the Graduate School, Purdue University, in partial fulfillment of the requirements for the M.S. degree, August, 1954.

Submitted as journal paper 961, Agricultural Experiment Station, Purdue University, Lafayette, Ind.

This study was supported in part by a research grant and materials from the Stine Laboratory, Grasselli Chemicals Department, E. I. du Pont de Nemours and Co. (Inc.), Newark, Del.

TABLE 3—SMP-1 Treatment of Transmissible Gastroenteritis in Pigs Two Hours Prior to Exposure

Pen	Pigs exposed	Dose of SMP-1	Length of treatment	Results*
1	3	100 mg./kg./day	5 days	Died
2	3	150 mg./kg./day	.....	Died
3	3 (controls)	None	.....	Died

*All of the pigs were dead by the fifth day.

SUMMARY

Three experiments using SMP-1 were conducted to determine its effect on transmissible gastroenteritis.

The time of administration relative to exposure and the size of the dose were varied. When the drug was given 30 to 40 minutes prior to oral exposure, the treated animals lived several hours to approximately four days longer than the untreated controls. Where the drug was given two hours before exposure, the treated pigs lived no longer than the untreated controls. At necropsy, the lesions found were typical of transmissible gastroenteritis.

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III. The Effect of SMP-1 and Other Drugs on Swine Dysentery

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L. P. DOYLE, D.V.M., Ph.D.

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Numerous drugs have been used to treat swine dysentery or bloody diarrhea of swine. In this study, some of these drugs were compared with SMP-1.

LITERATURE CITED

Swine dysentery was first reported as a separate disease at the Indiana Agricultural Experiment Station in 1921 by Whiting *et al.*[1] The apparent cause remained unknown until 1944, when Doyle[2] reported that a Vibrio was definitely associated with swine dysentery. Doyle[3] repeatedly reproduced the disease in healthy swine by feeding them minced dysenteric colon and contents. James and Doyle[4] reproduced swine dysentery by feeding equal parts of Vibrio cultures and prepared gastric mucin to susceptible pigs. Several vibrios may be found in the intestinal tract of the pig. One Vibrio in particular appears to be pathogenic and, when fed to susceptible pigs, will cause a bloody diarrhea.

The treatments that have been used on swine dysentery and other forms of swine enteritis are numerous. At one time, common salt was used and reported to be of value in therapy. For dysentery and Salmonella infections, Koen[5] recommended an intestinal astringent and oats soaked in salt water followed by daily feedings of salted buttermilk. Plenty of fresh water was available at all times for the treated animals. Tischhauser,[6] Truax,[7] Steenerson,[8,9] and Wilson[10] have made similar reports. It was common practice to follow this treatment with anti-hog cholera serum.

The sulfonamides have also been used to treat swine dysentery. Favorable results with sulfonamides have been reported by Larsen.[11] Cole[12] reported that various sodium sulfonamides injected intraperitoneally and sulfathalidine given *per os*, in addition to other treatments, were of little benefit in treating swine dysentery. According to Boley *et al.*,[13] sulfamethazine and sulfathalidine gave poor results when compared to other treatments. Doyle and Salisbury[14] reported that when sulfathalidine was combined with a small amount of arsenic, 0.4 gr. to each gram of sulfonamide, the death loss due to swine dysentery was reduced but the disease was not definitely eliminated. Terry[15] reported excellent results with a combination of 2.0 Gm. of sulfathalidine and 12.0 mg. of sodium arsanilate for each 20 to 30 lb. of body weight for one day, followed by subsequent doses of one half that amount for two or three days.

Kernkamp[16] reported that sodium arsanilate and 4-nitro-phenyl arsonic acid were both effective in treating cases of swine dysentery. Boley *et al.*[13] reported that, although shoats treated with sodium arsanilate recovered from bloody diarrhea, symptoms of unthriftiness continued. Boley's report stated that a large dose of bacitracin gave good results. Carpenter and Larsen[17] reported that the use of the arsonic acids in combination with antibiotics was very effective in treating the disease and preventing its recurrence. Robinson[18] reported that acetylarsan and stovarsol not only prevented but were effective in the treatment of swine dysentery in Australia.

Salisbury *et al.*[19] used streptomycin and aureomycin® singly and together; neither completely

From the Department of Veterinary Science, Purdue University, Lafayette, Ind.

Taken from a thesis "Experimental Treatment of Swine Enteritis" submitted (by Hurst) to the faculty of the Graduate School, Purdue University, in partial fulfillment of the requirements for the M.S. degree, August, 1954.

Submitted as journal paper No. 962, Agricultural Experiment Station, Purdue University, Lafayette, Ind.

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TABLE 1—The Effect of SMP-1 on Swine Dysentery

No. of pigs	Dose of SMP-1*	No. of treatments	Results
5	50 mg./kg./day.	14	Diarrhea stopped after 3 treatments, recurrences in all in 5 days.
5	100 mg./kg./day.	14	Diarrhea stopped after 3 treatments, recurrences in all in 9 days.
5	100 mg./kg./day.	6	Diarrhea stopped after 3 treatments, recurrences in most in 49 days.
2	100 mg./kg./day.	12	Treated controls, no evidence of toxicity.
3	100 mg./kg./day.	5	Diarrhea stopped after 5 treatments, recurrences in all in 21 days.
3	150 mg./kg./day.	5	Diarrhea stopped after 5 treatments, recurrences in all in 21 days.
5	150 mg./kg./day.	6	Diarrhea stopped after 3 treatments, no recurrences.
2	200 mg./kg./day.	6	Diarrhea stopped after 3 treatments, no recurrences.
3	200 mg./kg./day.	2	Diarrhea stopped after 2 treatments, no recurrences.
13	None.	0	Severe and persistent diarrhea.

*SMP-1 was given orally in the feed once daily.

eliminated dysentery in every case. Recurrences were common but the severity of the symptoms and the death losses were definitely reduced. Doyle[20] studied the effects of streptomycin on 2,793 pigs on 11 farms where swine dysentery was prevalent. He concluded that this drug has the ability to decrease the economic loss, thus justifying its use in herd treatment.

MATERIALS AND METHODS

A total of 84 feeder shoats, weighing from 30 to 60 lb., were treated. Of this number, 46 were treated with SMP-1 and 38 were treated with such drugs as aureomycin, streptomycin, sulfathalidine, sulfathalidine with arsenic, sulfathalidine with neomycin, and tetracycline. Thirty pigs served as untreated controls. Three controlled experiments using only SMP-1 and four controlled experiments using it and other drugs were conducted. These experiments are summarized in tables 1 and 2.

Two healthy unexposed shoats were isolated and given SMP-1. The drug was given at the rate of 100 mg. per kilogram of body weight per pig per day for 12 days as a preliminary toxicity study. There were no toxic symptoms observed.

RESULTS AND SUMMARY

A new experimental drug, SMP-1, was used in five controlled experiments to determine its value as a treatment for swine dysentery. It was also compared with some of the drugs that are currently used to treat this disease.

The first trials were concerned only with the use of the new drug (table 1). These were conducted for the purposes of establishing a dose range and to observe any toxic manifestations. No toxic symptoms were observed at any time during these trials.

TABLE 2—A Comparison of SMP-1 and Other Drugs for Treating Swine Dysentery

No. of pigs	Drug	Dose	No. of treatments	Results
5	SMP-1.	1.0 Gm.	5	Good, but mild recurrences.
5	Aureomycin.	1.0 Gm.	5	Poor, slight improvement, persistent diarrhea.
5	Tetracycline.	1.0 Gm.	4	Poor, slight improvement, persistent diarrhea.
5	Sulfathalidine with arsenic.	2.0 Gm. 0.8 gr.	5	Poor, slight improvement, persistent diarrhea.
5	Sulfathalidine.	1.25 Gm.	4	Poor, persistent diarrhea.
5	Streptomycin.	1.0 Gm.	5	Good, no recurrences.
5	Sulfathalidine with neomycin.	1.25 Gm. 0.75 Gm.	4	Good, no recurrences, made quickest recovery.
10	None.	Controls.	0	Severe and persistent diarrhea.
4	SMP-1.	1.0 Gm.	4	Good, but mild recurrences.
4	Streptomycin.	1.0 Gm.	4	Good, no recurrences.
4	SMP-1.*	0.5 Gm., orally; 0.5 Gm., IP.	4	Good, but mild recurrences.
4	Streptomycin.*	0.5 Gm., orally; 0.5 Gm., IP.	4	Good, no recurrences.
7	None.	Controls.	0	Severe and persistent diarrhea.

*The dose was divided, one half was given orally and one half was given intraperitoneally. All other medication was given in the feed.

All of these animals were quartered in semi-isolated concrete pens in order to curb the spread of dysentery to swine in adjacent areas.

Except for one experiment, all of the medication was given in the feed once a day. The exception may be seen in table 2. SMP-1 and streptomycin were given both orally and intraperitoneally to two different groups of shoats.

SMP-1 appeared to be more effective than aureomycin,® tetracycline, sulfathalidine, or sulfathalidine with arsenic (table 2).

It was therapeutically similar to streptomycin for dysentery but it was not com-

pletely effective for all of the pigs in every trial and mild recurrences were often observed. The severity of the symptoms, however, was lessened considerably and death loss was low.

The new drug was not as effective as sulfathalidine with neomycin in limited trials. Where this combination was used, the results were good. All symptoms and recurrences stopped for the duration of the experiment after sulfathalidine and neomycin were used.

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Toxoplasmosis in Man and Swine

An investigation of the possible relationship between toxoplasmosis in man and in other animals has implicated swine and rodents in a role somewhat similar to that in trichinosis. While toxoplasmosis is considered a common infection in man, the method of infection has not been established, although some cases are congenital.

This investigation indicated that: swine may be infected by ingesting infected rodents or by cannibalism; they are carriers of Toxoplasma; the organisms in their tissues survive ordinary refrigeration and gastric digestion; and that persons who eat undercooked pork seem more likely to have toxoplasmic serums with high titers than other groups. There probably are other methods of transmission. The study is being continued.—*J.Am.M.A., May 19, 1956.*

Eperythrozoonosis in New York Swine.—Eperythrozoonosis, not previously reported from a northeastern state, was found in a herd of swine near Ithaca, N. Y., in August, 1955. The disease was reproduced in 4 splenectomized pigs.—*Cornell Vet., April, 1956.*

Provoking Swine Influenza by Exposure

Of 25 pigs infected with lungworms carrying masked swine influenza virus, 4 developed typical swine influenza when exposed to adverse weather conditions; 6 others showed serological evidence of infection. The remaining 15, and 8 lungworm-free pigs, showed no evidence of infection. The exposure seemed responsible for provoking the masked influenza virus to infectivity.—*Vet. Bull., April, 1956.*

Leptospirosis in a Swine Herdsman.—A man, in Missouri, who developed severe headache, fever, an enlarged spleen, and congestion of the conjunctiva, was negative at first to the agglutination test for *Leptospira pomona* but later was positive (1:640). Of 18 swine under his care, 16 were positive for *L. pomona.*—*Pub. Health Serv., April 28, 1956.*

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a brief case history and radiograph depicting a diagnostic problem is presented.

Make your identification from the picture — then see below

History.—The above radiograph was taken after an iodized oil solution had been injected into a natural body cavity in an animal.

Here Is the Identification

Identification.—The radiograph shows opaque fluid in the teat canal and adhering to the ventral wall of the lactiferous sinus of a normal mammary gland of a cow.

Comment.—The radiograph is presented because it suggests the possible use of this technique as an aid in studying diseases of the udder.

This case was submitted by members of the clinical staff, College of Veterinary Medicine, University of Illinois, Urbana.

Our readers are invited to submit case histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

Metastatic Micrococcic Infection (Botryomycosis) in a Cat

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Bethesda, Maryland

MICROCOCCIC infections of the internal organs of animals often simulate mycotic infections and connective tissue neoplasms. The history and necropsy findings in animals with these debilitating, chronic conditions also are quite similar, and bacteriological and histopathological examination of tissues with differential stains are often necessary to differentiate these three pathological lesions.

Micrococci infection (botryomycosis) is defined by Runnells[5] as a chronic infectious disease, frequently a wound infection, occurring mostly in horses but occasionally in other animals, caused by bacteria, *Micrococcus ascoformans*, and characterized by the formation of local tumor-like proliferations resembling fibroma and, occasionally, by the occurrence of metastasis to the internal organs.

Micrococcic infection of the abdomen with metastasis to the internal organs has not been reported in man and, so far as is known, this is the first case of this disease reported in the cat.[1-4,6]

CASE HISTORY

A well-nourished, spayed female cat, approximately 4½ years old, was brought to the National Institutes of Health on April 25, 1955. She had been spayed after raising a normal litter of kittens when she was about 1 year old. In September, 1953, she developed a severe case of mange with loss of hair along the back. She was placed on a low carbohydrate diet for six months without noticeable change in the skin condition but the dermatitis quickly disappeared when she was treated with phisohex.*

The cat was in good health until September, 1954, when the owner noticed that she had an enlarged abdomen. This symmetrical swelling gradually disappeared and the animal appeared healthy until Jan. 17, 1955, when the abdomen again became enlarged and the cat became restless and showed evidence of pain in the abdominal region. She had diarrhea for ten days with no control over bodily discharges, and she would scratch the children when they picked her up.

Clinical examination revealed a swollen

*Winthrop-Stearns, New York, N. Y.

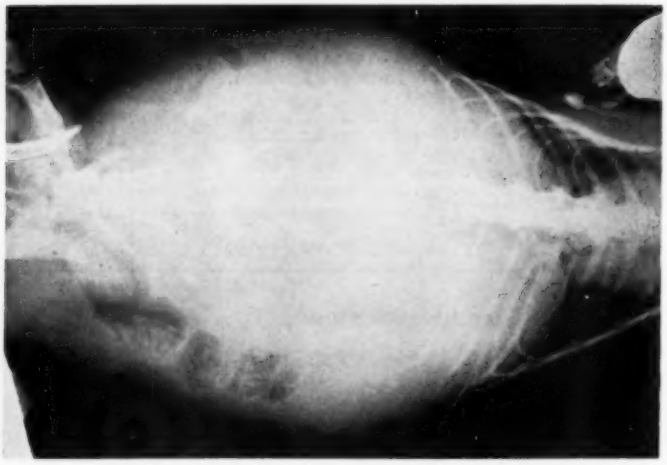

Fig. 1—Ventrodorsad radiograph of cat showing extent of tumorous growths in abdomen and lungs.

From the office of the associate director in charge of research, Comparative Pathology Section, National Cancer Institute, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare, Bethesda, Md.

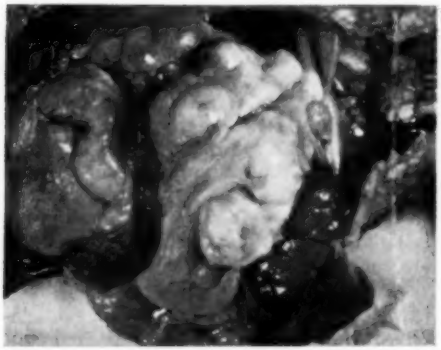

Fig. 2—Tumor-like growths on the mesentery of the cat with attachments to stomach, pancreas, and cecum.

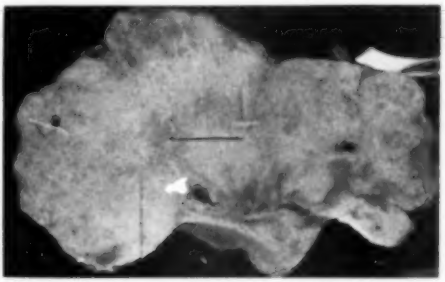

Fig. 3—The mass was firm, white, and speckled with soft yellowish areas.

abdomen and evidence of pain on palpation around the stomach or urinary bladder where hard, movable masses of tissue were felt. Radiographs of the thoracic and abdominal region revealed tumorous masses in the abdominal and thoracic cavities (fig. 1). The owner consented to euthanasia.

GROSS PATHOLOGY

The cat was well nourished, had a glossy coat, and appeared to be in good health except that her abdomen was symmetrically enlarged.

The cervical, renal, and peribronchial lymph nodes were enlarged and edematous. Several tumorous nodules were found on the lower lobe of the right lung, the largest measuring 0.5 cm. The spleen was enlarged, congested, and covered with a fibrinous exudate. The liver surface was irregular and spotted with small tumorous nodules measuring from 0.5 to 1.0 cm. The kidneys appeared normal. There was a multilobulated mass in the mesentery, the largest lobule measuring 10.5 by 8.0 by 5.5 cm. It was firmly attached to the cecum, small and large intestines, stomach, and pancreas (fig. 2). The mass was white, firm, dense, and speckled and the cut surface showed white bands of fibrous tissue radiating from soft, yellowish brown areas (fig. 3). Bacteriological cultures were not made since the mass was believed to be neoplastic.

HISTOPATHOLOGY

Tumorous Mass.—Sections of the mass showed the tissue to be coalescing infectious granulomas. The centers of some of the granulomas contained granules or colonies that were made up of grapelike clusters of *M. ascoformans* (fig. 4). Each colony of organisms was surrounded by a smooth, translucent, gelatinous capsule and the colonies were surrounded by layers of polymorphonuclear leukocytes, lymphocytes, and plasma cells (fig. 5). The largest of these individual granulomas measured 2 mm. The periphery of the colonies was enclosed in granulation tissue with dense bands of fibrous tissue, and the entire mass was encapsulated with a thick band of fibrous connective tissue.

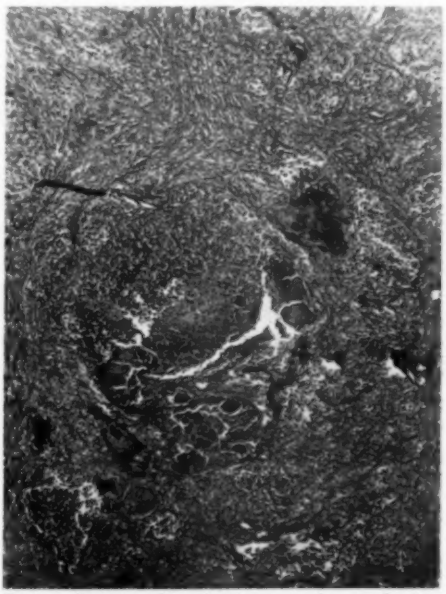

Fig. 4—Section of coalescing granulomas showing granules made up of clumps of micrococci, x 42.

Metastatic Micrococcic Infection (Botryomycosis) in a Cat

ROBERT T. HABERMANN, M.S., D.V.M., and FLETCHER P. WILLIAMS, Jr., B.S.

Bethesda, Maryland

MICROCOCCIC infections of the internal organs of animals often simulate mycotic infections and connective tissue neoplasms. The history and necropsy findings in animals with these debilitating, chronic conditions also are quite similar, and bacteriological and histopathological examination of tissues with differential stains are often necessary to differentiate these three pathological lesions.

Micrococci infection (botryomycosis) is defined by Runnells[5] as a chronic infectious disease, frequently a wound infection, occurring mostly in horses but occasionally in other animals, caused by bacteria, *Micrococcus ascoformans*, and characterized by the formation of local tumor-like proliferations resembling fibroma and, occasionally, by the occurrence of metastasis to the internal organs.

Micrococcic infection of the abdomen with metastasis to the internal organs has not been reported in man and, so far as is known, this is the first case of this disease reported in the cat.[1-4,6]

CASE HISTORY

A well-nourished, spayed female cat, approximately 4½ years old, was brought to the National Institutes of Health on April 25, 1955. She had been spayed after raising a normal litter of kittens when she was about 1 year old. In September, 1953, she developed a severe case of mange with loss of hair along the back. She was placed on a low carbohydrate diet for six months without noticeable change in the skin condition but the dermatitis quickly disappeared when she was treated with phisohex.*

The cat was in good health until September, 1954, when the owner noticed that she had an enlarged abdomen. This symmetrical swelling gradually disappeared and the animal appeared healthy until Jan. 17, 1955, when the abdomen again became enlarged and the cat became restless and showed evidence of pain in the abdominal region. She had diarrhea for ten days with no control over bodily discharges, and she would scratch the children when they picked her up.

Clinical examination revealed a swollen

*Winthrop-Stearns, New York, N. Y.

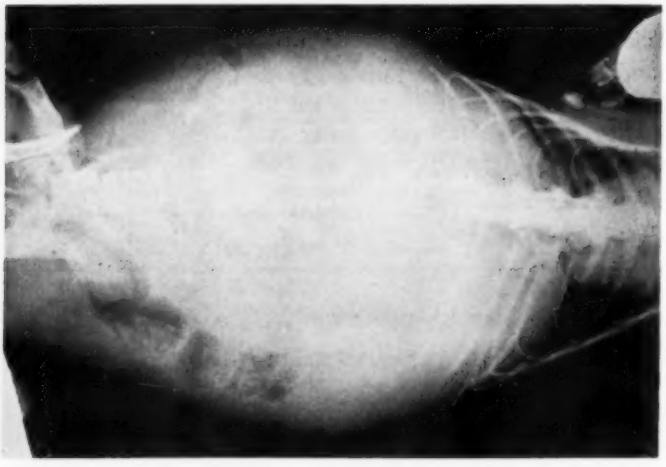

Fig. 1—Ventrodorsad radiograph of cat showing extent of tumorous growths in abdomen and lungs.

From the office of the associate director in charge of research, Comparative Pathology Section, National Cancer Institute, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare, Bethesda, Md.

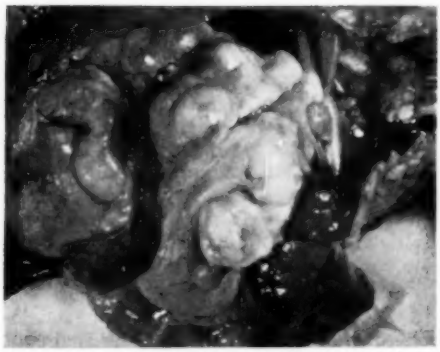

Fig. 2—Tumor-like growths on the mesentery of the cat with attachments to stomach, pancreas, and cecum.

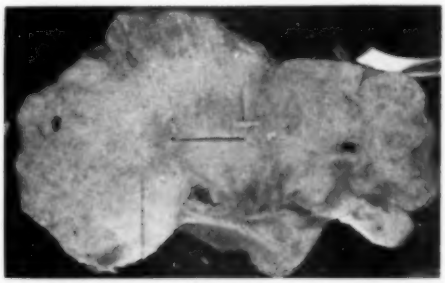

Fig. 3—The mass was firm, white, and speckled with soft yellowish areas.

abdomen and evidence of pain on palpation around the stomach or urinary bladder where hard, movable masses of tissue were felt. Radiographs of the thoracic and abdominal region revealed tumorous masses in the abdominal and thoracic cavities (fig. 1). The owner consented to euthanasia.

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The cat was well nourished, had a glossy coat, and appeared to be in good health except that her abdomen was symmetrically enlarged.

The cervical, renal, and peribronchial lymph nodes were enlarged and edematous. Several tumorous nodules were found on the lower lobe of the right lung, the largest measuring 0.5 cm. The spleen was enlarged, congested, and covered with a fibrinous exudate. The liver surface was irregular and spotted with small tumorous nodules measuring from 0.5 to 1.0 cm. The kidneys appeared normal. There was a multilobulated mass in the mesentery, the largest lobule measuring 10.5 by 8.0 by 5.5 cm. It was firmly attached to the cecum, small and large intestines, stomach, and pancreas (fig. 2). The mass was white, firm, dense, and speckled and the cut surface showed white bands of fibrous tissue radiating from soft, yellowish brown areas (fig. 3). Bacteriological cultures were not made since the mass was believed to be neoplastic.

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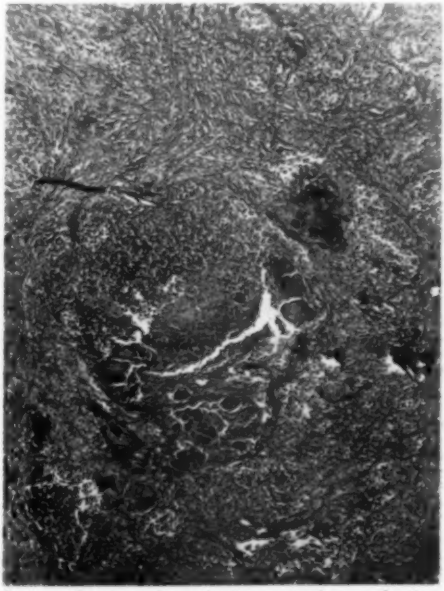

Fig. 4—Section of coalescing granulomas showing granules made up of clumps of micrococci. x 42.

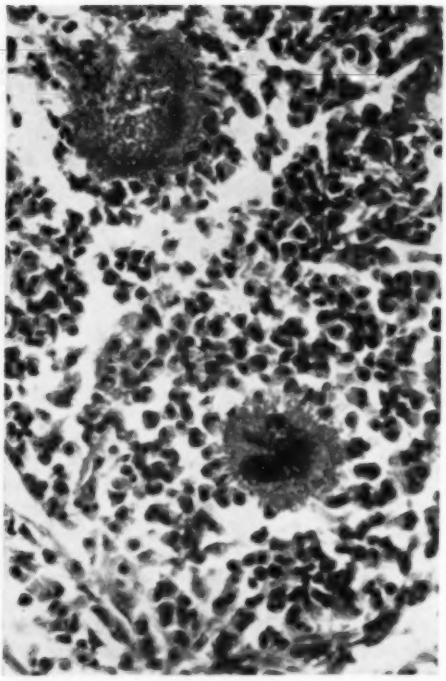

Fig. 5—Clumps of Micrococcus ascoformans in two of the granules in the involved tissue. x 860.

Esophagus.—There were numbers of mast cells in the mucosa and submucosa and the fascia around the esophagus showed fibrosis, scattered small granulomatous lesions and a thrombus in a vessel of one granuloma. The partially occluded vessel was surrounded by epithelioid cells infiltrated with large numbers of eosinophils, lymphocytes, and monocytes. A large artery adjacent to the lesions showed fibrosis on the adventitial surface and infiltration of eosinophils, polymorphonuclear cells, lymphocytes, and monocytes.

Lung.—There were scattered granulomas, up to 1 mm. in diameter, throughout the parenchyma, and the larger bronchi contained a mucoid exudate. The granulomas (fig. 6) had necrotic centers containing clumps of micrococci, nuclear debris, and were surrounded by epithelioid cells, polymorphonuclear leukocytes, lymphocytes, monocytes, and eosinophils, and a few foreign-body giant cells.

Stomach.—The mucosa of the stomach was essentially normal but, in the submucosa, there were scattered pools of serum, lymphocytic follicles, and areas of fibrosis. The muscularis mucosa showed fibrosis. The serosa showed scattered granulomas surrounded by lymphocytes, plasma

Fig. 6—Granulomas of the lung measuring from 0.5 to 1.0 mm. in diameter. x 42.

cells, polymorphonuclear leukocytes, and areas of calcification.

Spleen.—There were large reaction centers in the follicles of the spleen, densely stained basophilic cells distended the cortical and medullary sinusoids, and megakaryocytes were numerous. The capsule and trabeculae were thickened. There was a fibrinous exudate containing lymphocytes, monocytes, plasmacytes, small nests of epithelioid cells, and foreign-body giant cells on the serosal surface.

Pancreas.—The pancreas showed fibrosis of the omental attachments and infiltration of inflammatory cells.

Mesenteric Lymph Nodes.—There was marked follicular activity in the mesenteric lymph nodes and some sinusoids were distended with lymphocytes, polymorphonuclear leukocytes, plasmacytes, and macrophages while others were distended with pools of serous fluid. The capsules were thickened and there was fibrosis and infiltration of lymphocytes, monocytes, and plasmacytes on their surfaces. The lymph nodes in other locations showed moderate follicular activity.

Liver.—The liver showed moderate fatty metamorphosis. Some of the sinusoids were distended with clumps of lymphocytes. There was also budding of bile ducts, periportal infiltration of lymphocytes, and some yellowish brown pigment in the Kupffer cells. There were focal areas of necrosis and fibrinous thickening of the capsule with infiltration of lymphocytes.

Colon.—The colon showed no significant lesions in the mucosa and submucosa, but numerous granulomas of varying sizes and fibrosis of the muscularis and serosa were seen.

Kidney.—There were focal areas of interstitial fibrosis and infiltration of lymphocytes and monocytes in the cortex. The vessels were distended and some showed perivascular pools of serum and infiltration of lymphocytes. The nearby areas showed some hyaline casts in the uriniferous tubules.

The Jejunum, Urinary Bladder, and Uterus.—These organs had a thick fibrinous exudate infiltrated with leukocytes on their serosal surfaces.

SUMMARY AND CONCLUSIONS

A 4½-year-old spayed cat had a granulomatous infection of the abdominal and thoracic viscera. The primary site of infection is not known.

On gross and radiographic examination, this infection could be confused with connective tissue tumors. Microscopically, it resembled a mycotic infection but was identified by the characteristic clumps of bacteria, *Micrococcus ascoformans*, in the lesions.

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[2]Hagen, William Arthur: The Infectious Diseases of Domestic Animals. Comstock Publishing Co., Inc., Ithaca, N.Y., 1948.

[3]Kral, Frank, Novak, Benjamin J., and Beck, John D.: Veterinary Dermatology. J. P. Lippincott Co., Philadelphia, 1953.

[4]McFadyean, John: J. Comp. Path. and Therap., *32*, (1919): 73-89.

[5]Runnells, Russell A.: Animal Pathology. Iowa State College Press, Ames, Iowa, 1954.

[6]Wilson, G. S., and Miles, A. A.: Topley and Wilson's Principles of Bacteriology and Immunity. vol. 2, 3rd. ed. Williams and Wilkins Co., Baltimore, 1946.

An Unusual Canine Melanoma

Metastatic melanomas of the brain are rare but one was found in a female Labrador Retriever, 7 years old. She had been coughing for a week, had an epileptiform convulsion, then developed unilateral blindness and incoordination. Necropsy revealed multiple melanomas, 0.5 to 4.0 cm. in diameter, in both lungs and a large melanoma under the meninges. Ten months previously, a melanoma, 1.0 cm. in diameter, had been excised from her lower lip. Histopathologically, the tumors were characteristic of a highly malignant melanoma.—*J. E. B. Graham, D.V.M., Canad. J. Comp. Med. and Vet. Sci., March, 1956.*

Blastomycosis in a Dog

A case of blastomycosis in a dog, in France, commenced with interdigital nodules then disseminated through the lymphatic system. Nodules in the skin folds developed into pseudotumors up to 20 mm. in length. The dog became cachectic and was destroyed after 11 months. Numerous budding yeast cells and chlamydospores were found in the nodules. A pure growth of an apparently new species of yeast, *Candida pseudotumoralis*, was isolated.—*Vet. Bull., April, 1956.*

A Survey of Gastrointestinal Parasites of Cattle in South Carolina

DOROTHY J. HITCHCOCK, Ph.D.

Columbia, South Carolina

During 1955, fecal samples from 2,180 cattle in South Carolina were examined for gastrointestinal parasites. Of the total, at least 11 samples were obtained from each of the 46 counties in the state. Since an attempt was made to learn the life history of these animals, only cattle born and raised in South Carolina were included in this study.

The specimens examined were mainly from adult dairy cattle at private farms, public institutions, and abattoirs. The field samples were obtained from freshly defecated or rectal material. Other samples were secured from the large intestines of animals on the killing floor at the abattoirs.

In the laboratory, the fecal samples, one per animal, were examined by using the sugar centrifugal-flotation technique[1] and the modified acid-ether method with trition-NE.[2]

The percentage incidence figures (table 1) were lower than expected. The majority of the samples showed few stages of any

Dr. Hitchcock is assistant parasitologist at the Clemson Livestock Laboratory, Columbia, S. Car.

Technical contribution No. 248 from the South Carolina Agricultural Experiment Station, Department of Entomology and Zoology, Clemson.

TABLE 1—Incidence of Gastrointestinal Parasites of Cattle

Parasites	No. of animals parasitized	Incidence (%)
Coccidia	468	21.5
Strongyles and trichostrongyles*	872	40.0
Strongyloides	11	0.5
Nematodirus	17	0.7
Trichuris	27	1.2
Neoascaris	3	0.1
Fasciola	37	1.6
Moniezia	70	3.2
No parasites found	680	31.2

*Includes Oesophagostomum, Bunostomum, Ostertagia, Haemonchus, Trichostrongylus, Cooperia, and Chabertia.

Fig. 1—Geographic distribution of Fasciola hepatica. Areas where infection occurred are stippled.

species of parasite in the stools. Only a few of the animals involved showed clinical parasitism.

The presence of *Fasciola hepatica* in cattle in this state is of special interest. Of the 37 animals found infected with this liver fluke, 25 were known to have been born and raised in South Carolina. The life histories of these infected animals were obtained by personal communication with the owners. Twelve additional cows were parasitized, but their histories could not be secured.

Fasciola hepatica were found in cattle in 16 counties (fig. 1). Because of the nature of the life cycle of *F. hepatica*, the proper snail host for this parasite must be living in this state. The northwestern counties in which infected cattle were found are hilly and mountainous, the southern counties are swampy, sandy coastal areas. Wild deer found in the Francis Marion National Forest, Berkeley County, and cattle shipped in from Florida to some of the southern counties have been found to be infected with this liver fluke.

With an increase in the number of sheep in this state, liver fluke infection may become an economic problem in both sheep and cattle.

The geographic distribution by counties of each parasite found did not form any definite pattern. Coccidia oocysts were found in samples from every county except Marion. The strongyles and trichostrongyles, as a group, were found in all counties. Of the 46 counties in South Carolina, Strongyloides eggs were found in four, Nematodirus in eight, Trichuris in 11, Neoascaris in three, Fasciola in 16, and Moniezia in 28.

The incidence of coccidia and strongyles and trichostrongyles showed a seasonal variation reaching a peak in the months of May (coccidia, 66%; strongyles and trichostrongyles, 71%) and June (coccidia, 60%; strongyles and trichostrongyles, 77%).

The estimated total cattle population for South Carolina in 1955 was 492,000. The 2,180 fecal samples examined represented 0.44 per cent of the total cattle in the state.

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[2]DeRivas, D: An Efficient and Rapid Method of Concentration for the Detection of Ova and Cysts of Intestinal Parasites. Am. J. Trop. Med., *8*, (1928): 63-72.

Tendovaginitis Syndrome of Fowl

An infectious agent, a Rickettsia or possibly a large virus, was isolated from a new syndrome of tendovaginitis with arthritis in chickens. The disease affects 5 to 30 per cent of a flock and usually is fatal in three to four weeks. The birds show weakness, emaciation, anemia and, finally, diarrhea and a turbid caseous exudate within and around the synovial tissues of the tendons and joints.

The agent passed a bacteria-retaining filter but with a drop of titer; it multiplied in chicken embryos. It was most sensitive to the tetracycline range of antibiotics and was resistant to penicillin. It caused no gross lesions in mice, guinea pigs, or young pigs.—*Vet. Bull., April, 1956.*

Serological Test for Johne's Disease.—A modified complement-fixation test, used in five groups of cattle, indicated its value for the diagnosis of Johne's disease when the cattle are free of tuberculosis. In animals showing signs of Johne's disease, it is superior to the allergy reaction test.—*Vet. Bull., April, 1956.*

Brucella Intermedia in Ewes.—Examination of four strains of Brucella isolated, in Switzerland, from ewes which had aborted, revealed the presence of *Brucella intermedia*. This type of organism was also found in milk from a cow and a goat—possible sources of infection for man.—*Vet. Bull., April, 1956.*

Disinfecting Anthrax-Contaminated Skins.—Anthrax-contaminated skins can be disinfected effectively by soaking for 48 hours in water containing sodium bisulfite (2.4%) and sodium chloride (8.0%), then for 30 hours in a solution of hydrochloride acid (5.0%) and sodium chloride (12.0%) at 30 C. This should be done in a revolving cylinder to disperse air bubbles.—*Vet. Bull., April, 1956.*

Newcastle Disease in the United States Since 1938.—A recent study of unidentified viruses carried by periodic passage in embryonating eggs indicates that Newcastle disease was present in New Jersey and Illinois as early as 1938.—*Cornell Vet., April, 1956.*

Cardiac Anomaly in a Dog

SIDNEY J. MICHAEL, V.M.D.

Erie, Pennsylvania

A Boston Terrier, 9 months old, had shown dyspnea most of its life. In the week before the dog was presented, the labored breathing had become progressively worse. The dog was weak, cyanotic, and stood with difficulty. Thoracic auscultation and percussion indicated that the heart was enlarged and encroaching on the lung space. This was confirmed by a radiograph (fig. 1). The dog died a few hours after this examination.

Necropsy revealed an enlarged heart filling the major portion of the thoracic cavity (fig. 2). When the heart was opened, the aortic and pulmonary valves were absent.

Dr. Michael is in small animal practice in Erie, Pa.

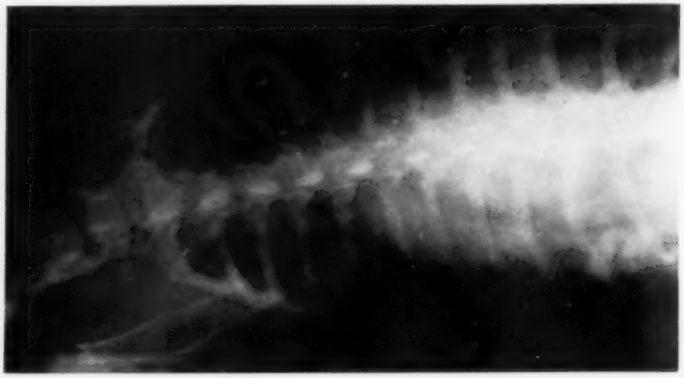

Fig. 1—Radiograph of thoracic cavity showing an enlarged heart.

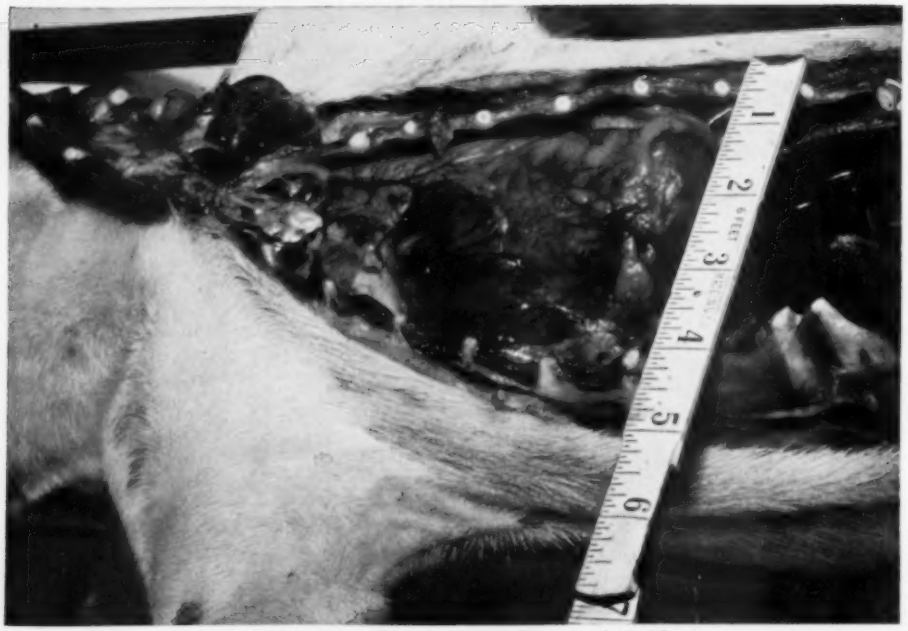

Fig. 2—Photograph taken at necropsy showing enlarged heart.

Postvaccination Abscesses

In treating small animals, a so-called "cold abscess" occasionally follows the subcutaneous injection of a serum or vaccine. Practitioners are often disturbed about these abscesses because they tend to reflect unfavorably on the technique which was employed.

Contamination of the biological product is often blamed. These products are usually purchased in a vial which contains several doses (usually 10), and contamination is possible before all the content is used. However, the abscesses appear so inconsistently that contamination could hardly account for their presence. Furthermore, cultures made of the pus from such abscesses and also of the biological product remaining in the vial have failed to give evidence that infection was involved.

A different explanation for these abscesses is suggested by an article in the *American Journal of Surgery* (April, 1956, p. 467) dealing with traumatic fat necrosis. In commenting on fat as "the most unpopular of the tissues," the authors emphasized "the vulnerability of fat to trauma." They stated that in man fat necrosis has been seen following hypodermoclysis and other hypodermic injections. It also may follow trauma to babies during difficult delivery, as well as to persons of any age and to any region where fat is found. However, fat necrosis is rarely seen in "the boxer or football player."

Other possible causes of fat necrosis mentioned are: strangulation or interference with blood supply of tissues, surgical trauma, radiation, or even extreme cold such as use of an ice pack or hypothermia applied during certain surgical procedures. It also seems to be related to infection. The authors believe that fat necrosis is more common than is realized and is recognized only when lesions such as abscesses are formed.

Referring again to postinjection lesions in animals, when one of these lesions is incised, it not infrequently contains a sequestrum which presumably could be necrotic adipose tissue. However, injections are followed more frequently by local firm swellings, which may persist for a week or longer, than by abscesses. Perhaps these firm lesions are also associated with fat necrosis but to a degree small enough to allow for eventual complete absorption.

This explanation of postinjection abscesses seems logical enough to merit further study.

The Whey Test for Brucellosis Could Speed Eradication

The whey-agglutination test for bovine brucellosis (described on p. 19) seems to offer a relatively simple and practical means of distinguishing the actually infected animal from the one with a blood agglutination titer due to the Brucella vaccine, strain 19. Obviously, the test can be applied only to lactating cows.

The chief advantage of the whey-agglutination test is that, following vaccination, the titer recedes much faster than with the serum test. Although the whey test titer does linger for a few months after cows are vaccinated, its use would accelerate elimination of brucellosis in many herds. The taking of blood samples, which is a problem in large modern dairy herds where cows are seldom tied, is eliminated.

It has often been said that no disease has been eradicated by vaccines alone. In the case of bovine brucellosis, the vaccine could control, but probably not eliminate, the disease. Neither has the test and elimination program alone proved practical.

The program now being pursued, combining use of the vaccine, when indicated, with the agglutination test, would seem to greatly increase the prospects for eventual eradication. By shortening the period in which vaccination interferes with testing, the whey test could encourage the greater use of both methods and thus reduce both the time required and the eventual cost of bovine brucellosis eradication.

JOURNAL Masthead Is Reduced

Because of space requirements, the masthead (on Contents p. 2) of the JOURNAL is reduced, beginning with this issue. The names of officers, the Executive Board, the associate editors, and the foreign language abstractors will no longer be published in each issue.

All of these, except the abstractors, will continue to appear in the AVMA Roster which is published in the October JOURNAL and in the "Directory." The foreign abstracts will now be signed with the name of the abstractor instead of just the initials.

Current Literature

ABSTRACTS

Pathology of Errington's Disease in Muskrats

Necropsies were performed on 66 muskrats which had died of Errington's disease. The gross pathological changes were characterized by an acute hemorrhagic reaction in one or more portions of the intestinal tract, focal necrosis of the liver, and atrophy of the spleen.

Histopathological changes were recorded from 19 muskrats. Congestion was common to all tissues examined. Areas of necrosis were present throughout the liver; hepatic cells adjacent to necrotic areas contained bacteria with terminal spores. Interlobular and interalveolar edema was present in the pancreas. The islets of Langerhans, showed evidence of degeneration. Acute membranous enteritis with accompanying hemorrhage into the lumen was observed in the intestines.—[*G. H. Lord, A. C. Todd, and C. Kabat: Studies on Errington's Disease in Muskrats. I. Pathological Changes. Am. J. Vet. Res., 17, (April, 1956): 303-306.*]

Phenothiazine for Lambs

An experiment is reported wherein administration of phenothiazine suspension, N.F., in two 25-Gm. doses gave beneficial responses in fattening lambs under drylot conditions, in terms of increased weight gains and consequently improved carcass quality. It would appear that phenothiazine is most effective in reducing moderately heavy infections (1,000 to 2,000 worms per lamb) to a point (500 or less) where the infection is not so serious in its effect upon the lamb as to affect weight gains and carcass characteristics significantly.—[*P. H. Allen and J. E. Oldfield: Phenothiazine Treatment of Fattening Lambs in Drylot. Am. J. Vet. Res., 17, (April, 1956): 243-245.*]

Prepared Feeds and Salmonella Infection in Laboratory Animals

Heating commercially prepared feeds at 210 to 220 F. in dielectric ovens for one-half hour destroyed contaminating microorganisms of the Salmonella group. It did not appreciably impair the nutritive value of such feed for mice, as determined by reproduction and growth of offspring.

Tests were carried through three successive generations with feed 3 and later with only one generation with feed 2. The three-generation study was linked to a simultaneous test of two other feeds, unheated. The three pelleted feeds were commercially prepared for laboratory mice or for dogs.

Feed 2, the one that seemed most satisfactory, was used in the fourth generation to test the influence of preheating. Simultaneously, a crisscross experiment was conducted with some animals changed from feed 2 to 3, some changed from feed 3 to 2, and others maintained on their original feed. This showed the better results with feed 2 to be attributable to the character of the feed rather than to any inherent differences in the groups of animals or from accidental developments in the course of the investigation.—[*Charles A. Griffin and William R. Thompson: Studies of Prepared Feeds in Relation to Salmonella Infection in Laboratory Animals. II. Reproduction and Growth of Mice on Heated and Unheated Commercially Prepared Feeds. Am. J. Vet. Res., 17, (April, 1956): 311-317.*]

FOREIGN ABSTRACTS

Latent Infection of Rats Recovered from Plasmodium Infection

A study of rats that had recovered from infection with *Plasmodium berghei* showed that microscopic examination of the blood was usually negative. Of 145 rats examined postmortem from two to 28 months after recovery, 10.3 per cent showed visible plasmodia. Of the negative rats, 25 (18%) were shown to be infected by injection of blood or tissue extract into susceptible rats or mice. The virulence of the latent plasmodia, obtained from rats showing no visible organisms, was greater than that of plasmodia obtained from rats in the acute stage of the disease.—[*E. Sergent and Alice Poncet: Experimental Studies in Malaria of Rodents. Plasmodium Berghei. II. Postinfection Latency. Arch. Inst. Pasteur d'Algérie, 33, (1955): 195-22.*]—J.P.S.

Recent Developments in the Pharmacology of Ergot

In the Middle Ages, the ingestion of flour contaminated with ergot caused widespread epidemics of poisoning. Since 1808 when Stearns used ergot for the stimulation of uterine contractions, this fungus, and alkaloids derived from it, have been used in pharmacology. In recent years, six natural alkaloids have been isolated, and several of their derivatives are also available. The chief pharmacological actions of the ergot alkaloids are: uterotonic, vasoconstriction, antimigraine, corticosympathetic stimulant, vasodilation, control of hyperthermia, and production of artificial hibernation.—[*E. Rathlin and A. Fanchamps: Some Recent Developments in the Pharmacology of Ergot of Rye. Rev. Path. Gén. et Comp. (1955): 1427-1443.*]—J.P.S.

Electrophoresis in the Diagnosis of Rabies

Studies conducted at the Pasteur Institute indicate that paper electrophoresis of serum proteins may be of considerable value in the early diagnosis of rabies. Electrophoretic patterns of the serums of rabies-affected dogs, horses, donkeys, cattle, and cats revealed a marked increase in the a_2 globulin fraction of the serum protein. In bacterial and parasitic diseases, there was an increase in *gamma* globulin with no appreciable

increase in the a_2 fraction. It is suggested that the electrophoretic test may find application in the early diagnosis of rabies which is so important from the standpoint of control and public health. —[*M. A. Chabaud, et al.: Electrophorese et Diagnostic de la Rage, Ann. Inst. Pasteur, 88, (Oct., 1955):420-434.*]—R.F.V.

Ornithosis in Pigeons

In Germany, there are many cases of ornithosis in "travelling" pigeons. These birds show, predominantly, symptoms of respiratory disorders, whereas affected "racing" pigeons showed pathological changes in the digestive organs and symptoms of paralysis.

The virus of the disease was found in the spleen, liver, and in the exudates. No virus could be isolated from the eggs of infected pigeons.

Good treatment results have been achieved with chloramphenicol.—[*F. Fritzsche, H. Lippelt, and F. Weyer: Contribution to Epidemiology, Diagnosis and Therapy of Ornithosis in Pigeons. Berl. u. Münch. tierärztl. Wchnschr., 4, (1956): 61.*]—F.K.

BOOKS AND REPORTS

Proceedings Book, German Veterinary Medical Association

On March 26-27, 1955, the first congress of the German Veterinary Medical Association was held in Bad Nauheim. The 22 papers presented at this meeting have been published in a proceedings book and include the following subjects: virus diseases, research on brucellosis, virus abortion in sheep, toxoplasmosis, tuberculosis, skin lesions in cattle, general anesthesia, Bantische syndrome in dogs, sublingual hemorrhages in equine infectious anemia, intramedullary pinning in dogs, external fracture fixation, hog cholera, immunity of the newborn, Newcastle disease, Salmonella infections, bladderworms of cattle, animal parasites in waste water, effect of shipping on the quality of meat, and serological examination for differentiation of *Escherichia coli* organisms.—[*Proceedings from the First Congress of the German Veterinary Medical Association. Paul Parey, Berlin and Hamburg, Germany, 1955. Price not given.*]—FRANK KRAL.

Food Poisoning

This revised edition of "Food Poisoning," written by the director of the Food Research Institute of the University of Chicago, includes new information, much of it from research in the author's laboratories. The chapter on Salmonella food poisoning contains the results of investigations sponsored by the Armed Forces in the Far East. It indicates that the experienced meat inspector readily recognizes Salmonella-infected carcasses and credits this for the scarcity of Salmonella infections in this country.

The portions of the book dealing with bacterial food poisoning are extensively revised and the problems created by new methods of processing foods, including chemical additives such as insecticides, rodenticides, and antioxidants, are evaluated.

The author discusses chemical poisons, poisonous plants and animals, botulism, staphylococci, Salmonella, streptococci, and other bacteria in food poisoning. He presents the symptoms, epidemiology, pathology, and laboratory methods of diagnosis of each. Specific illustrative case reports are also given and each chapter has a list of appropriate references.

The last chapter deals with infections to be differentiated from food poisoning, such as bacillary and amebic dysentery, infectious hepatitis, trichinosis, and others.

This book would be a valuable reference for physicians, health officers, and sanitarians.—[*Food Poisoning. By G. M. Dack. 3rd ed. 251 pages. University of Chicago Press, Chicago, 1956. Price $6.00.*]

Advances in Veterinary Science

This is the second volume of a series of textbooks, the first of which was published in 1953, planned to review the progress in the more active fields of veterinary science. It consists of 11 chapters, each by an international authority, four of whom are from abroad.

The subjects and authors are: Epizootiology of Virus Diseases, R. E. Shope, New York; Mycoses of Animals, C. W. Emmons, Maryland; Respiratory Disease of Poultry, H. Van Roekel, Massachusetts; Blood Groups of Animals, L. C. Ferguson, Ohio; Diseases Caused by Deficiencies of Trace Elements, I. J. Cunningham, New Zealand; Photosensitization in Animals, N. T. Clare, New Zealand; Rumen Dysfunction, A. T. Phillipson, Scotland; Bovine Ketosis, J. C. Shaw, Maryland; Tickborne Rickettsioses in South Africa, D. A. Haig, South Africa; Vibriosis, W. N. Plastridge, Connecticut; and Effective Control of Internal Parasites, D. C. Boughton, Delaware.

Each contributor has reviewed the literature on his subject and has made appropriate comments. The total effect is a summarization of a wealth of information on the subjects discussed. Much practical information is presented, as well as many interesting and thought-provoking theories. Perhaps the most significant of these theories, because of its far-reaching economic implications, is that of Shope regarding the origin of hog cholera.

Few veterinarians will fail to find in this text one or more articles of great value to them. It is definitely a good investment for veterinarians.—[*Advances in Veterinary Science. Vol. II. Edited by C. A. Brandly and E. L. Jungherr. 409 pages. Academic Press, Inc., New York City, N. Y., 1955. Price $10.*]—W. A. AITKEN.

THE NEWS

Deans of Veterinary Schools Attend Atomic Energy Symposium

A symposium on atomic energy and veterinary medicine, sponsored by the Oak Ridge Institute of Nuclear Studies in cooperation with the Oak Ridge National Laboratory and the U.S. Atomic Energy Commission, was held in Oak Ridge, Tenn., on April 30-May 2, 1956. The deans of the schools of veterinary medicine had received invitations to attend this symposium and all those in the United States were present, except one. Principal T. L. Jones of the Ontario Veterinary College, Guelph, Ont., also attended, as did Generals E. W. Young and W. O. Kester of the Army and Air Force Veterinary Corps, respectively; Dr. J. H. Steele, U.S. Public Health Service; and Dr. C. D. Van Houweling, Agricultural Research Service.

Among those who participated in the symposium were: Dean W. A. Hagan, New York State Veterinary College, Ithaca; Major U. S. Grant Kuhn, III, V.C., and Major Max Nold, V.C., U. S. Air Force, Oak Ridge, Tenn.; Col. John Rust, V.C., U. S. Army, Chicago; and Lt. Col. Bernard F. Trum, V.C., U. S. Army, Oak Ridge.

s/A. H. GROTH, *Secretary, Association of Deans of American Colleges of Veterinary Medicine.*

Country Doctor Heads A.M.A.

Dr. Dwight H. Murray, a general practitioner from Napa, Calif., became president of the American Medical Association at their meeting in Chicago on June 12, 1956. He is the first general practitioner to head that association since 1867.

U. S. GOVERNMENT

New Animal Disease Laboratory Site to Be Chosen.—U. S. Department of Agriculture Secretary Benson announced on June 6 initial steps toward selection of a site for construction of new facilities for work on animal diseases, in accordance with suggestions from leaders of both houses of Congress.

The U.S.D.A. originally proposed that new facilities be located at Beltsville and asked for about a $19-million appropriation for construction. Congress generally favored the new facilities but at a different location and suggested that the U.S.D.A. select a site close to centers of livestock production, near or in conjunction with a land grant college having a strong veterinary medical program.

In cooperation with livestock and related interests, Secretary Benson has selected a site committee consisting of representatives of the beef cattle, dairy cattle, swine, sheep, and poultry industries, the land grant colleges, the veterinary medical profession, state departments of agriculture, and the livestock sanitary association.

Site proposals were invited early in June and arrangements were made for preliminary hearings in St. Louis and for on-the-spot surveys by the site committee of locations considered desirable.

Secretary Benson's announcement included a number of specifications or factors that would guide the site committee, such as accessibility, availability of utilities and housing, and nearness of a land grant college with a veterinary school or strong veterinary science department.

The new facilities will provide for research simultaneously on some 25 different animal diseases without danger of cross infection and with safety measures to prevent escape of disease organisms from the laboratories.

The need for new research and diagnostic laboratories is considered urgent as a result of the abandonment in July of last year of the 50-year-old, inadequate facilities in Washington, in Auburn, Ala., and Denver, Colo.

AMONG THE STATES AND PROVINCES

Alabama

Tuskegee Institute Honors Graduates.—On Sunday, May 20, President and Mrs. Foster of Tuskegee Institute held a reception in their home in honor of the members of the graduating class, their parents, and alumni. Other commencement features were a play, "The Glass Menagerie," by the Little Theatre; the ROTC parade and demonstration; awarding of prizes; and a band concert.

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Dr. Sugg Receives Award.—Dr. R. S. Sugg (API '15), dean of the School of Veterinary Medicine, Alabama Polytechnic Institute, was awarded a certificate of appreciation by the Southern Regional Education Board for "past and current services in the cause of interstate cooperation in higher education in the South," and specifically for his "service to the region in development of regional contract programs." A portion of his citation read: "Your efforts on behalf of your students and your pride in their accomplishments have helped to make of this program more than just an educational and financial arrangement." Dr. Sugg was one of five so honored.

s/M. K. HEATH, *Secretary, Alabama V.M.A.*

California

Kern County Association.—At a recent meet-

ing of the Kern County Veterinary Medical Association, the following officers, all of Bakersfield, were elected: Albert Batista, president; Richard Stierns, vice-president; Charles Burger, program chairman; and A. L. Irwin, secretary-treasurer.

s/A. L. IRWIN, *Secretary.*

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East Bay Association.—At the April 25 meeting of the East Bay Veterinary Medical Association, a program on eye surgery was presented. This included film strips and demonstrations.

Dr. W. G. Peart, Sacramento, discussed availability and quality of veterinary biological products at the May 29 meeting which was held at Robin Hood Inn, Oakland.

s/L. S. GOLDSTON, *Secretary.*

Illinois

Theta Chapter of Omega Tau Sigma Chartered at University.—Formal chartering and initiation was conducted for the Theta Chapter of Omega Tau Sigma, professional veterinary fraternity, at the University of Illinois on April 14, 1956. Omega Tau Sigma, a member of the professional interfraternity council, was established in 1906 at the University of Pennsylvania.

Conducting the chartering was Dr. T. C. Fitzgerald, national vice-president and a member of the staff at the School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn. Also present for the ceremonies was Dr. Robert Vesper, national historian, a member of the veterinary medical faculty at Ohio State University.

Other guests included Drs. Robert Graham, dean of the College of Veterinary Medicine at the University of Illinois; J. O. Alberts, AVMA student chapter advisor; L. E. St. Clair, Jesse Sampson, and L. E. Boley of the University of Illinois faculty.

Fifty-five veterinary medical students were present for the chartering and were initiated into the Chapter. Included among the initiates were three young ladies—this constitutes a "first" in the history of Omega Tau Sigma.

s/ALBERT KOLTVEIT, *Secretary.*

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Iowa

Eastern Iowa Clinic.—The annual clinic of the Eastern Iowa Veterinary Association was held at Hawkeye Downs in Cedar Rapids on May 8.

The following veterinarians participated in the program: poultry section—David W. Gregory, Washington, Iowa; Andrew J. Cotten, Grundy Center; C. D. Lee, Ames; Warren J. Kilpatrick, Mediapolis; swine section—R. L. Winegarden, Waterloo; John Dick, Fort Dodge; Lloyd D. Jones, Omaha, Neb.; William H. Calhoun, Riceville; L. C. Swain, Wellman; Kenneth H. Randolph, Lost Nation; and Paul C. Bennett, Ames; small animal section—Merrill Vanderloo, Dubuque; C. B. Thayer, Iowa City; Alan R. Raun, Ottumwa; Durwood L. Baker, Ames; and Russell H. Anthony, Cedar Rapids; large animal section—R. T. Speaker, Keota; J. N. Hunt, Mount Pleasant; Paul M. Haight, Cresco; H. E. Weimer, Riverside; Harry D. McCreedy, Ottumwa; George Swift, Fort Madison; and M. L. Stroup, Corinth, Miss.; public health section—William M. Lynch, Cedar Rapids; I. A. Merchant, Ames; S. L. Hendricks, Des Moines; Glen O. Fly, Cedar Rapids; and R. V. Johnson, Zionsville; bovine sterility section—E. L. Wahl, Anamosa; John B. Herrick, Ames; E. W. Speer, Stanwood; B. L. Bushnell, Manchester; and Don Buchanan, Grundy Center; large animal surgery—James Ramsey, Tipton; O. W. Whitcomb, Center Point; S. G. Paul, Clarence; N. R. Waggoner, Olin; B. W. Kingrey, Ames; J. W. Sexton, Sumner; M. C. Larson, Keystone; and H. J. Hardenbrook and L. E. St. Clair, Urbana, Ill. Drs. William L. Andrews, Milton, and John Bryant, Mount Vernon, demonstrated gadgets.

s/F. E. BRUTSMAN, *Secretary.*

Kansas

Conference for Veterinarians.—The eighteenth annual conference for Kansas veterinarians was held on the Kansas State College campus in Manhattan on June 1-2, 1956.

The following were program participants: L. Meyer Jones, Ames, Iowa; M. J. Twiehaus, Manhattan; R. A. Stocking, Los Angeles, Calif.; W. P. Johnson, Nanuet, N.Y.; Morris Erdheim, Highland Park, Ill.; H. C. H. Kernkamp, St. Paul, Minn.; Embert Coles, Manhattan; and members of the faculty of the School of Veterinary Medicine, Kansas State College.

s/E. E. LEASURE, *Dean.*

Massachusetts

State Association.—At the May 23 meeting of the Massachusetts Veterinary Medical Association, an Australian film, "Contagious Pleuropneumonia in Cattle," was shown. The guest speakers were Drs. William K. Harris and Henry Van Roekel of the Department of Veterinary Science, University of Massachusetts, Amherst. Dr. Harris discussed pleuropneumonia-like organisms and their significance to the practitioner; and Dr. Van Roekel, ornithosis and the practitioner. Dr. C. K. Mingle, assistant chief of the Disease Eradication Branch, Agricultural Research Service, Washington, D. C., presented the latest research data on brucellosis.

s/C. LAWRENCE BLAKELY, *Secretary.*

Maine

State Association.—The spring meeting of the Maine Veterinary Medical Association was

called to order by the president, Dr. J. A. Elliott, at the Penobscot Valley Country Club, Orono, on April 11.

The afternoon and evening sessions consisted of routine business and special speakers. Maine Association members taking part in the program were Drs. F. Langdon Davis, Augusta; Grant Savage, Waterville; Dale E. Smith, Caribou; H. D. Bither, Westbrook; G. W. Breed, Augusta; and Calvin Newman, Island Falls.

There were 69 veterinarians and their wives at the annual banquet.

The evening program speaker was Dr. David L. Coffin, pathologist, Angell Memorial Hospital, Boston, Mass. His subject was "Diagnosis of Small Animal Diseases."

The quarterly summer meeting will be held the second Wednesday in July.

s/H. L. CHUTE, *Resident Secretary.*

Michigan

Dr. Sanders Named Veterinarian of the Year.—At the annual meeting of the Michigan State Veterinary Medical Association in Saginaw, June 21-22, Dr. Albert Sanders, Jr. (CVC '08), a general practitioner in Stephenson, was presented a plaque designating him Michigan Veterinarian of the Year for 1956.

For almost 50 years, Dr. Sanders has given his community competent, unselfish service in the field of veterinary medicine and in the promotion of quality dairy herds and scientific animal husbandry in general. He has also been active in civic affairs, having been mayor, postmaster, and justice of the peace of Stephenson. His insistence on serving his clients even beyond the limits of his physical strength has been the concern of his many friends, but it is an indication of his regard for his position. In 1954, the farmers and townspeople of Stephenson gave a banquet and celebration in his honor to express their high regard for him.

Dr. Sanders is a member of the AVMA and the Michigan State and Upper Peninsula Veterinary Medical Associations.

s/KENNETH FRASER, *Chairman, Veterinarian of the Year Committee.*

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Southeastern Association.—At the May 23 meeting of the Southeastern Michigan Veterinary Medical Association at the Croatian Center, Detroit, Mr. Robert Smith, Medical Defense Administration, Office of Civil Defense, gave a talk on the veterinarian and civil defense.

s/GILBERT MEYER, *Secretary.*

Missouri

Death of B. B. Roseboom.—Mr. Benjamin B. Roseboom, Columbia, Mo., died on April 20, 1956, at the age of 72. Mr. Roseboom, who had taught in the Department of Physiology at Michigan State University for several years, retired in 1949 and accepted a position as professor of veterinary physiology at the University of Missouri. His long service as a teacher of veterinary physiology gave him a wide acquaintance with veterinarians. His wife preceded him in death.

s/A. H. GROTH, *Dean, School of Veterinary Medicine.*

New York

New Veterinary Research Center.—A new research center, to be known as the Margaret M. Caspary Center for Veterinary Research, is being constructed in New York City near the Ellin Prince Speyer Hospital at 350 Lafayette St. The proposed ten-story building was made possible by a grant to the New York Women's League for Animals; it will probably be completed in 1958.

Dr. John D. Beck, professor of veterinary medicine and head of the Department of Medicine, School of Veterinary Medicine, University of Pennsylvania, will be chief of staff for the new Center, and Dr. David L. Coffin, Angell Memorial Animal Hospital, Boston, will be director of research.

The purpose of the Center is the study of small animal diseases.

Texas

Dr. Schmidt Honored on Retirement.—Dr. Hubert A. Schmidt (BER '12), who served the Texas Agricultural Experiment Station and the School of Veterinary Medicine, A. & M. College of Texas, with distinction for 43 years, retired June 1, 1956.

Dr. Schmidt is a native of Texas and one of the state's foremost veterinarians. With the late Dr. Mark Francis, he is credited with a major contribution to the cattle industry in the Southwest through the eradication of Texas tick fever. He has made many other important contributions in the field of nutritional and infectious diseases.

Prior to Dr. Schmidt's retirement, a dinner was held in his honor with Dr. J. K. Northway, chief veterinarian for the King Ranch and long-time friend of Dr. Schmidt, as the principal speaker. Dr. F. P. Jaggi, Jr., of the School of Veterinary Medicine, was toastmaster.

s/R. D. TURK, *Head, Department of Veterinary Parasitology.*

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Dr. Price Receives Award.—Dr. Alvin A. Price (TEX '49), assistant professor of veterinary anatomy, School of Veterinary Medicine, Texas A. & M. College, was one of five faculty members who received distinguished faculty achievement awards ($1,000) for outstanding accomplishments in teaching, research, and student relationships. The awards were made by the Association of Former Students of Texas A. & M. College.

Dr. Foust Returns to Pakistan.—Dr. H. L. Foust (OSU '14) who has been on "lend lease" to the Veterinary College of East Pakistan for nearly two years, as a consultant for the Texas A. & M. College System, visited his home in Tyler, Texas, in May. Mrs. Foust returned to Pakistan with him. Dr. Foust retired as head of the Department of Veterinary Anatomy at Iowa State College in 1952.

Wisconsin

Northeastern Association.—The Northeastern Wisconsin Veterinary Medical Association held its spring meeting at the Hotel Manitowoc in Manitowoc on April 18. There were 60 members and guests present.

Dr. J. Trace, Fort Dodge Laboratory, Fort Dodge, Iowa, spoke on dispensing of drugs; and Drs. H. J. O'Connell and W. J. O'Rourke, Madison, also addressed the group. The dinner speaker was Lt. Col. Woodrow V. Nold, professor of air science, Lawrence College, Appleton.

At the business session, Dr. Q. C. Metzig, Oshkosh, was elected as the new delegate to the executive board of the state Association.

s/WILLIAM MADSON, *Secretary.*

COMMENCEMENTS

Kansas State College.—At the 1956 commencement exercises of the School of Veterinary Medicine, Kansas State College, Manhattan, the following 64 candidates were presented for the D.V.M. degree:

Claude P. Bates, Jr.
Richard D. Baxter
James K. Benedict
Henry C. Black
Wayne D. Bradley
Donald C. Breeden

Graduating Class, 1956, School of Veterinary Medicine, Kansas State College

Top row (left to right)—Gordon L. Rasberry, Robert J. Gelok, Leonard G. Thomas, Byron S. Johnson, Wayne D. Bradley, Marvin L. Mills, Merwin L. Frey, F. Gerry Day, Stuart G. Hazard, Jr., Fred D. Wingert, John C. Deam, Charles D. Chapin.

Second row—Richard J. Kirkeminde, Donald C. Breeden, Earl E. Gatz, Richard A. Vandercook.

Third row—Thomas B. Hanshew, Donald E. Randgaard, James K. Benedict, Ernest A. Henderson, Billy J. LaRue, Jack D. Railsback, Edward L. Gillette, Donald D. Griffiths, Glen E. Nicholson, Richard D. Baxter, W. W. Holland, David M. Suss.

Fourth row—Joe H. Ostendorf, Joseph E. Landholm, Gilbert M. Stahl, Raymond L. Russell, Raymond F. Walker, Marvin L. Samuelson, Anna K. Hurlburt, Paul M. Nesbitt, Ralph G. Buckner, William G. Kvasnicka, Earl V. Osterheld, Chester J. Ward, Jr.

Fifth row—Claude P. Bates, Jr., James A. Walsdorf, Richard A. Hartkopf, James R. Butler, Norman E. Gray, David A. Schoneweis, Richard D. Schmitz, Norman Pang, Henry C. Black, Leo N. Taylor, Martin R. Frey, Theodore Vera.

Sixth row—Gordon T. Jamieson, Charles R. Jones, Glen L. Krumme, Donald D. McReynolds, Dane W. Bruster, Perry E. Schurr, Jack E. Vanderlip, Gene L. Shores, Theodore C. Sims, Jude L. Swalley, John E. Kuenzi, Alton J. Wilson.

Dane W. Bruster
Ralph G. Buckner
James R. Butler
Charles D. Chapin
F. Gerry Day
John C. Deam
Martin R. Frey
Merwin L. Frey
Earl E. Gatz
Robert J. Gelok
Edward L. Gillette
Norman E. Gray
Donald D. Griffiths
Thomas B. Hanshew
Richard A. Hartkopf
Stuart G. Hazard, Jr.
Ernest A. Henderson
W. W. Holland
Anna K. Hurlburt
Gordon T. Jamieson
Byron S. Johnson
Charles R. Jones
Richard J. Kirkeminde
Glen L. Krumme
Joha E. Kuenzi
William G. Kvasnicka
Joseph E. Landholm
Billy J. LaRue
Donald D. McReynolds
Marvin L. Mills
Paul M. Nesbitt
Glen E. Nicholson
Joe H. Ostendorf
Earl V. Osterheld
Norman Pang
Jack D. Railsback
Donald E. Randgaard
Gordon L. Rasberry
Raymond L. Russell
Marvin L. Samuelson
Richard D. Schmitz
David A. Schoneweis
Perry E. Schurr
Gene L. Shores
Theodore C. Sims
Gilbert M. Stahl
David M. Suss
Jude L. Swalley
Leo N. Taylor
Leonard G. Thomas
Richard A. Vandercook
Jack E. Vanderlip
Theodore Vera
Raymond F. Walker
James A. Walsdorf
Chester J. Ward, Jr.
Alton J. Wilson
Fred D. Wingert

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University of Montreal.—At the 1956 commencement exercises of the Ecole de Médecine Vétérinaire, University of Montreal, St. Hyacinthe, Que., the following 19 candidates were presented for the D.V.M. degree:

Cyril Arscott
Armand Comeau
Michel Fortin
Paul-Emile Gauthier
André Girard
Jacques Jasmin
Roland Jodoin
Georges-Henri Labonté
Jos-Yves Lachapelle
Jacques Lafortune
Jean Loiselle
René Martel
Leo Mathieu
Raoul Mathieu
Denis Mongeau
Jacques Ratelle
Raynald Roy
Reuben-Ralph Say
Jules Trudeau

Graduating Class, 1956, Ecole de Medecine Veterinaire, University of Montreal

Extreme left and top row (left to right)—Raynald Roy, Jules Trudeau, André Girard, Cyril Arscott, Georges-Henri Labonté, René Martel, Paul-Emile Gauthier, Reuben-Ralph Say, Jos-Yves Lachapelle, Jacques Jasmin, Michel Fortin, Jacques Ratelle, Armand Comeau, and Raoul Mathieu.

Bottom row—J. Loiselle, Leo Mathieu, Jacques Lafortune, Denis Mongeau, and Roland Jodoin.

Vertical row (right, top to bottom)—Mgr. I. Lussier, rector; Dr. G. Labelle, director; Dr. J. St. Georges; Rev. Père G. A. St. Denis; chaplain.

Vertical row (left)—Dr. J. Dufresne and Dr. J. D. Nadeau.

FOREIGN NEWS

Republic of Philippines

Drs. Oyzon and Quizon Study in United States.—Drs. Dominador Kausin Oyzon and Alejandrino S. Quizon, both graduates of the University of the Philippines, College of Veterinary Medicine, are in the United States for six months, doing graduate work at Kansas State College, School of Veterinary Medicine.

Dr. Oyzon is an instructor of veterinary anatomy at the Philippine school and Dr. Quizon is a virologist in the Philippine Bureau of Animal Industry.

STATE BOARD EXAMINATIONS

Minnesota—The Veterinary Examining Board of the State of Minnesota will hold examinations in the auditorium of the State Office Building, St. Paul, on July 10-11, 1956, at 8:00 a.m. Address inquiries to the executive secretary, Dr. A. C. Spannaus, Waconia, Minn.

DEATHS

★**Donald A. Eastman** (ISC '22), 57, Miami, Fla., died April 3, 1956, following an acute illness diagnosed as encephalomeningitis.

Born at Adel, Iowa, in 1898, Dr. Eastman received his D.V.M. from Iowa State College in 1922 and began practice in Cedar Rapids where he built a small animal hospital. In 1932, he sold his hospital and located in Moline, Ill., where he established another. This was sold in 1938 when Dr. Eastman moved to Florida and built a small animal hospital in Miami.

He was a charter member of the AAHA, served as its vice-president, then as secretary from 1935 to 1941 and was elected president in 1941. Dr. Eastman joined the AVMA in 1929.

Surviving are his widow; a son, John, of Mobile, Ala., and a stepson, John Crosby, who is a preveterinary student at Michigan State University.

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★**David F. Luckey** (OVC '91), 86, Tarkio, Mo., died May 3, 1956.

Born at Brazeau, Mo., in 1869, Dr. Luckey

(*Continued on next page*)

VETERINARY MILITARY SERVICE

The First Class, and Instructors, in the Meat and Dairy Hygiene Refresher Course Held April 29-May 19, 1956, at the Army Medical Service Meat and Dairy Hygiene School, Chicago

Front row (left to right)—Capt. Wiggo Christensen, adjutant; Lt. Col. Wayne D. Shipley, director of training; Col. Marion W. Scothorn, OTSG traveling consultant; Col. Philip R. Carter, commandant; Lt. Col. William A. Nusser, instructor; Major Roy W. Upham, instructor; Major James B. Young, instructor.

Second row—Major George T. Dalziel, U.S.A.F., instructor; Major Charles Hallett; Lt. Col. Glenn M. McFadden; Lt. Col. Lloyd C. Tekse; Capt. George M. Hughes; Major Dan Hightower, instructor.

Third row—Major Wilbur Klett; Lt. Col. Elwin R. Prather; Major Erich C. Mehnert; Lt. Col. Robert L. Hummer, U.S.A.F.; Lt. Col. George M. Kerr; Lt. Col. Clifford N. Decker.

Fourth row—Capt. Harrison S. Martin, instructor; Lt. Col. David S. Hasson; Lt. Col. George C. Coburn; Major Robert L. Brown, U.S.A.F.; Major Heyward G. Brown; Major John O. Wilson; Lt. Col. George A. Kuhn.

spent most of his life in Missouri and was one of the first veterinarians in that state to gain national prominence for his work in regulatory disease control programs. He received his early education in local schools, graduated from Warrensburg Normal School in 1891, was superintendent of schools in Aurora for three years, and then entered Ontario Veterinary College from which he received the V.S. degree in 1896.

He practiced for a time and then served as state veterinarian from 1900 to 1922. He carried on educational campaigns on milk sanitation and tuberculosis control in dairy cattle and was one of the first to apply the intradermal test on a wide scale, beginning in 1911. For this work and his other vigorous efforts and accomplishments in livestock sanitary science, Dr. Luckey was awarded the Twelfth International Veterinary Congress Prize by the AVMA in 1944.

He played a significant part in obtaining the original veterinary practice act in Missouri and was a member of the examining board for many years; he held graduate veterinary license No. 2 in the state.

Dr. Luckey is survived by two sisters, three children, and ten grandchildren.

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★**Harley E. Ash** (ONT '15), 66, Bowling Green, Ohio, died April 2, 1956. Dr. Ash, a veteran of World War I, had practiced in Bowling Green for 35 years. He was a member and past-president of the Ohio Veterinary Medical Association and was admitted to the AVMA in 1918. Dr. Ash is survived by his widow, a daughter, a son, and four grandchildren.

Roy W. Bowerman (KCV '11), 74, Oklahoma City, Okla., died May 13, 1956. Dr. Bowerman had practiced in Oklahoma City for 25 years. He had been a member of the AVMA.

Gerald W. Cady (ISC '21), 58, Mason City, Iowa, died April 11, 1956. Dr. Cady, a general practitioner, had been a member of the AVMA.

John W. Carlton (GA '33), Moultrie, Ga., died Jan. 17, 1956. Dr. Carlton was a general practitioner.

M. P. Freed (OVC '96), 86, Conneaut, Ohio, died Feb. 29, 1956. Dr. Freed was a general practitioner.

Thomas P. Gallahue (CVC '17), 65, Waukegan, Ill., died Feb. 25, 1956. Dr. Gallahue was county veterinarian of Lake County for 29 years. He was a veteran of World War I, and was a member of the Illinois Veterinary Medical Association which he joined in 1919. His survivors include his widow, a son, two daughters, and six grandchildren.

Arden L. Hirleman (CIN '03), 85, Savannah, Ga., died April 2, 1956. Dr. Hirleman, who had served with the BAI, had been a member of the AVMA for several years.

George N. Jull (ONT '16), 68, Loudon, Ont., died Feb. 29, 1956. After serving the Health of Animals Branch of the Canadian Department of Agriculture for 28 years, Dr. Jull retired in 1948 due to poor health. Since then, he had been employed by the Accurate Laboratories in Loudon. He was a veteran of World War I, having served with the British Army Veterinary Corps in Greece. Dr. Jull is survived by his widow, a daughter, and two grandchildren.

Donald T. Kemp (ONT '10), 74, Detroit, Mich., died Feb. 29, 1956. Dr. Kemp first practiced in St. Louis, Mich., where he was mayor and health officer. In 1923, he moved to Detroit and for 25 years served as city veterinarian. He was a member of the Southeastern Michigan Veterinary Medical Association and had been a member of the AVMA. His widow and one son survive.

Harvey A. Knoche (MCK '11), 66, Adrian, Minn., died April 10, 1956. Dr. Knoche had practiced in Adrian since receiving his D.V.M. degree in 1911. He was active in community activities, having served on the board of education, the light and water company, and as secretary of the Adrian Cooperative Elevator Company. Dr. Knoche is survived by his widow, one daughter, and three sons, two of which, Karl (KSC '40) and Ralph (KSC '43), also practice in Minnesota.

Cacig B. Mampreian (UP '16), Chicago, Ill., died March 4, 1956. Dr. Mampreian had been a member of the AVMA.

★**Clarence C. Merriman** (KSC '34), Los Angeles, Calif., died March 27, 1956. Dr. Merriman had recently served with the Agricultural Research Service, U.S. Department of Agriculture.

Harry B. Morris (MCK '13), 67, Keota, Iowa, died Jan. 29, 1956, following a heart attack. Dr. Morris had practiced in Keota for 30 years.

Edward C. Nash (MCK '18), 66, Arcadia, Wis., died Jan. 31, 1956, in an automobile accident. Dr. Nash was a general practitioner.

William O. Nelson (KCV '16), 66, Baldwyn, Miss., died Oct. 15, 1955. Dr. Nelson had practiced in Baldwyn for almost 40 years.

William H. Pflaeging (KCV '10), 72, Douglas, Wyo., died Feb. 6, 1956. Dr. Pflaeging had practiced in Douglas for 45 years. He retired a year ago. He was active in professional affairs and had served as president of the Wyoming Veterinary Medical Association. Dr. Pflaeging is survived by his widow and two daughters.

★**Frederick F. Schmidt** (KSC '32), 50, Douglas, Ariz., died April 9, 1956. Dr. Schmidt had practiced in the Douglas area since 1938. He was active in civic and professional activities and was a member of the AVMA and the Arizona Veterinary Medical Association. His widow, a daughter, and a son survive.

★**Claude Sevy** (KCV '16), 65, Salt Lake City, Utah, died in September, 1955. Dr. Sevy was a member of Utah Veterinary Medical Association and of the AVMA.

★Indicates members of the AVMA.

Benadryl®

HYDROCHLORIDE

(diphenhydramine hydrochloride, Parke-Davis)

First

Benadryl provides welcome relief for animals suffering from common skin irritations, dermatoses, and a variety of allergic conditions.

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PROFESSIONAL LITERATURE AVAILABLE ON REQUEST

Department of Veterinary Medicine

PARKE, DAVIS & COMPANY

DETROIT 32, MICHIGAN

ORGANIZATION SECTION

Ninety-Third Annual Meeting
San Antonio—October 15-18, 1956

Party for Military Veterinarians to Be Held During AVMA Convention

A dinner party for military veterinarians, to which all active and retired veterinary officers of the Army and Air Force and their ladies are invited, will be held in connection with the AVMA Convention on the evening of Oct. 15, 1956, at one of the officer's clubs in the San Antonio area.

RESERVATIONS WILL BE NECESSARY

Reservations for this party should be sent to Lt. Col. Clinton L. Gould, station veterinarian, Fort Sam Houston, Texas, on or before Sept. 1, 1956. The tickets for this party will be $10 per person, and a check or money order should accompany the request for reservations. Warm weather will prevail; thus summer clothing will be best suited for the convention.

WOMEN'S AUXILIARY

President—Mrs. Earl N. Moore, 636 Beall Ave., Wooster, Ohio.
Secretary—Mrs. F. R. Booth, 3920 E. Jackson Blvd., Elkhart, Ind.

How Members Can Best Serve the National Auxiliary.—Mrs. Norman Vincent Peale has stated that it has been estimated that "a successful wife is worth $250,000 to her husband," and that to be successful, you must "be willing to put your life and career into that of your husband's even if you have to change your ways." In so many instances, this is easier said than done but, with every husband-and-wife team working together, how can we fail to reach the objective? When there is so much to be done in the field of veterinary medicine, how can we neglect to give services when they are needed?

Too much emphasis can not be placed on the

The Quadrangle, Fort Sam Houston, San Antonio

work that is done in our student auxiliaries, for here the foundation is laid for active work in state auxiliaries and the AVMA Auxiliary. Wives of the seniors in veterinary medicine at Oklahoma A. & M. College received special degrees at the senior recognition program. The degree, "P.H.T.," means "Pushing Husband Through." These wives will continue to be an inspiration to their husbands and their profession. They will be enthusiastic about their auxiliary because they have been informed and, naturally, the more we know and understand about a subject, the more we appreciate it. To aid in a cause, we must believe in that cause; we must want to be informed so that we may share our knowledge with others. There are so many problems along the way and so many wives who can give the answers to these problems. Will you elect to be a problem in your auxiliary or will you volunteer and be the answer and inspiration for others to follow? One of the great satisfactions in life comes from getting things done and knowing that you have done them to the best of your ability.

Of most vital benefit to promoting and furthering the veterinarian in his profession is the status of the veterinarian and his wife in the community. If our everyday actions belittle us, we are hurting our husband's profession and likewise the Women's Auxiliary. One thought that we might keep in mind is: "Have I helped in making a place for my husband and my family in our community by serving the people there?" Let's keep an attitude of friendliness, good will, and service to those around us. We should never forget that we reflect on our husbands and they in turn on the profession.

When a student wife becomes a member of her state organization, it may be disappointing at first because her junior auxiliary met more often and she felt closer to the members. However, a little effort put forth will soon make her new membership an exciting experience and she will make a place for herself in the group. It has been found that local and regional auxiliaries within the state create more interest for the state auxiliary and the AVMA Auxiliary. When we can forget ourselves and work together to organize our auxiliary around some supreme values, then we will achieve our purpose.

When elected to an office, do we go a step further than is expected or are we content to be merely perfunctory in our work? We must keep pace with the rapidly changing interests of our members and keep before them the purpose of our Women's Auxiliary to the AVMA. When this is done, there will be no need for us to be reminded that our AVMA Auxiliary needs the cooperation and the dues of each one of us to keep all the wheels turning.

Emerson was wise and practical when he wrote: "The only gift is a portion of thyself." All of us can give appreciation, interest, encouragement, and our time and energy to a cause greater than ourselves.

s/(Mrs. T. S.) Mary Anna Maddox,
Greenville, Ky.

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Oregon Auxiliary.—The spring meeting of the Women's Auxiliary to the Oregon Veterinary Medical Association was held in Pendleton on May 12, 1956. Mrs. Russell Whitford was hostess for a morning coffee hour at her home, and Mrs. Lee Anderson, Mrs. Stanley McGough, and Mrs. Whitford planned a lovely luncheon for the members at the Pendleton Country Club.

A business meeting was held during that hour, at which the president, Mrs. Austin Eivers, appointed seven members, each from a different area in the state, to collect state and national dues from auxiliary members.

Following the luncheon, the women visited the famous Pendleton Woolen Mills and Hamley's Saddlery Shop.

In the evening, members and their husbands enjoyed a dinner and dance held at the Pendleton Country Club.

s/(Mrs. Dallen) Lucille Jones, *Secretary.*

STUDENT CHAPTER ACTIVITIES

Kansas Chapter.—The Kansas State College Student Chapter of the AVMA has enjoyed another successful year. The speakers for the meetings have been outstanding and the meetings well attended.

The annual functions began with the fall smoker which enabled chapter members to renew their acquaintances and gave freshmen an opportunity to meet the upperclassmen and professors.

Speakers for meetings during this year included Dean E. E. Leasure of Kansas State College; M. L. Dietrich, Newton; Charles Bower, Topeka; B. F. Mowry, Auburn, Neb.; R. E. Rebrassier, Columbus, Ohio; and Paul Swaffar, secretary of the American Hereford Association.

At the Nov. 15, 1955, meeting, A. L. Pugsley, dean of academic administration, presented the Borden Award to Joseph E. Landholm for leading his class in scholastic achievement.

Serving as officers for the spring semester were Robert Asmus, president; Calvin Sevy, president-elect; John Gibson, vice-president; Don Wainscott, secretary; Dale Kendall, treasurer; Robert Kind, marshall; and Phillip Randall, critic. Our faculty sponsors for this year were Drs. F. H. Oberst and J. E. Mosier.

The annual senior banquet and spring formal were held on April 7, 1956, at the Wareham Hotel.

s/James Walsdorf, *Chairman,*
Publicity Committee.

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s/James Walsdorf, *Chairman,*
Publicity Committee.

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative Bylaws.

BAKER, OWEN D.
Box 741, Choteau, Mont.
D.V.M., Texas A. & M. College, 1948.

BRAWNER, WILLIAM R.
1230 Garden Circle Drive, Ocala, Fla.
D.V.M., Alabama Polytechnic Institute, 1944.

CHARLEBOIS, GEORGE J., JR.
123 N. Alexander Ave., Claremont, Calif.
D.V.M., Texas A. & M. College, 1943.

COCKRUM, EARL D.
107 New Haven, San Antonio, Texas.
D.V.D., Detroit Veterinary College, 1917.

COOK, ORIE A.
8503 S. Arrington Ave., Rivera, Calif.
D.V.M., Chicago Veterinary College, 1917.

CORUM, H. K.
Box 262A, Bandera, Texas.
D.V.M., Texas A. & M. College, 1954.

GRAY, GEORGE W.
1132 Church St., Sulphur Springs, Texas.
D.V.M., Texas A. & M. College, 1946.

GRAY, JACK, JR.
Rt. 2, Box 172, Mission, Texas.
D.V.M., Texas A. & M. College, 1943.

DICKMAN, ANDREW J.
1335 M St., Fresno, Calif.
D.V.M., Kansas City Veterinary College, 1915.

FANCHER, JAMES M.
4 Takanto St., Concord, N. H.
D.V.M., Alabama Polytechnic Institute, 1943.

GREENING, VINCENT E.
2014 Cherry Ave., Long Beach, Calif.
D.V.M., Texas A. & M. College, 1939.

HOLLATZ, KONRAD
7 William St., Elmira, Ont.
D.V.M., Veterinary College, Hannover, Germany, 1944.

IVES, LEE H.
2222 First St., Perry, Iowa.
D.V.M., Iowa State College, 1949.

KONST, HERMAN
Animal Diseases Research Institute, 100 Tamelin Blvd., Hull, Que.
D.V.M., Royal Hungarian Veterinary College, Budapest, 1924.

MAKSIC, DRAGUTIN
806 S. Third St., Champaign, Ill.
D.V.M., University of Zagreb, 1940, and University of Illinois, 1955.

MOORE, PAUL M.
Box 726, Beeville, Texas.
D.V.M., Texas A. & M. College, 1938.

NAUMYK, FRANZ M.
5329 Wakefield St., Philadelphia, Pa.
D.V.M., Veterinary Academy, Lemberg, Poland, 1934.

SARDONE, THOMAS P.
829 N. Ridgeway Ave., Chicago, Ill.
D.V.M., University of Naples, Italy, 1944.

SAUNDERS, ROY D., JR.
216 E. Laurel, Lufkin, Texas.
D.V.M., Texas A. & M. College, 1951.

STANGER, RUSSELL S., JR.
Box 576, Brazoria, Texas.
D.V.M., Texas A. & M. College, 1945.

SWAIM, JOHN C.
Box 265, Temple, Texas.
D.V.M., Texas A. & M. College, 1949.

WEYERTS, PAUL R.
Box 150., Alpine, Texas.
D.V.M., Texas A. & M. College, 1952.

YEAGER, GEORGE W.
5946 66th St., Sacramento, Calif.
D.V.M., Texas A. & M. College, 1948.

Applicants — Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and names of his endorsers.

First Listing

ABEL, WILLIAM
214 Fernwood, Davenport, Iowa.
D.V.M., Cornell University, 1951.
Vouchers: E. L. Watson and W. H. Horn.

CARLOS, ENRIQUE R.
839 Marquez de Comillas, Manila, Philippines.
D.V.M., University of the Philippines, 1945.
Vouchers: J. A. Solis and A. C. Gonzaga.

CARTRITE, HUGH T.
Rt. 2, Box 154, Gonzales, Texas.
D.V.M., Texas A. & M. College, 1943.

HAYS, THOMAS A. S.
Zone Veterinarian, 348 P. O. Bldg., Baltimore, Md.
D.V.M., Ontario Veterinary College, 1938.
Vouchers: E. L. Watson and W. H. Horn.

HENRICH, EDWARD L.
Alton, Iowa.
D.V.M., Iowa State College, 1954.
Vouchers: E. L. Watson and W. H. Horn.

LAMPRU, PAUL D.
184 Artillery Post, Fort Sam Houston, Texas.
D.V.M., Alabama Polytechnic Institute, 1949.
Vouchers: C. L. Gould and G. F. Fischer.

ROBERTSON, D. S.
115 Tuttle Rd., San Antonio, Texas.
D.V.M., Kansas City Veterinary College, 1916.
Vouchers: A. R. Rees, Jr., and W. E. Hauser.

Second Listing

ANDERSON, GERALD A., 98th Tactical Hospital, Lincoln Air Force Base, Lincoln, Neb.

GEORGE, RALPH W., 1604 S. Washington Ave., Mobile, Ala.

WATSON, WILLIAM H., Jr., 1147 Freemont Drive, Montgomery, Ala.

Graduate Applicants

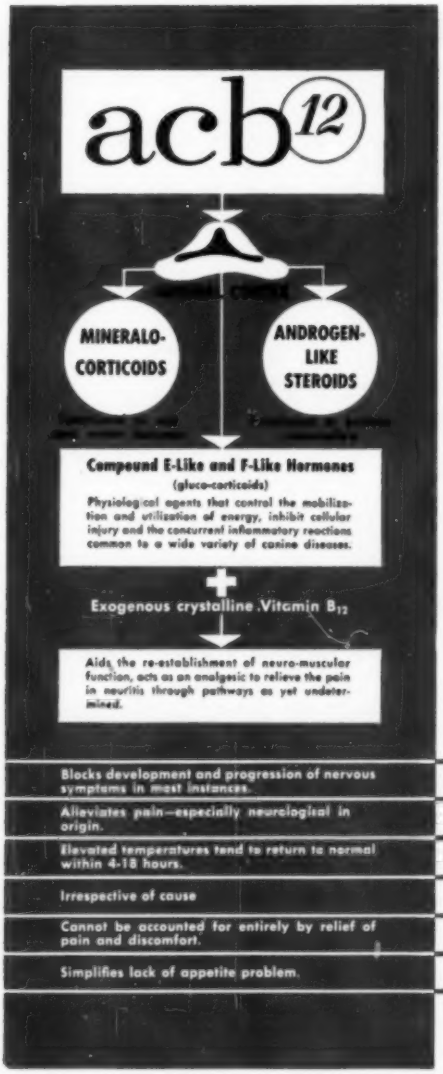
The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative Bylaws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

First Listing

University of Illinois*

All of the following applicants, with the exception of those otherwise noted, were vouched for by Drs. A. G. Schiller and L. C. Helper.

ANDERSON, WARREN N., D.V.M.
1817 Church St., Evanston, Ill.
Vouchers: T. N. Phillips and R. E. Storm.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ANDROGEN-LIKE STEROIDS
Compound E-Like and F-Like Hormones
(gluco-corticoids)
Physiological agents that control the mobilization and utilization of energy, inhibit cellular injury and the concurrent inflammatory reactions common to a wide variety of canine diseases.
Exogenous crystalline Vitamin B_{12}
Aids the re-establishment of neuro-muscular function, acts as an analgesic to relieve the pain in neuritis through pathways as yet undetermined.
Blocks development and progression of nervous symptoms in most instances.
Alleviates pain—especially neurological in origin.
Elevated temperatures tend to return to normal within 4-18 hours.
Irrespective of cause
Cannot be accounted for entirely by relief of pain and discomfort.
Simplifies lack of appetite problem.
CONTROLS NERVOUS SYMPTOMS
INHIBITS PAIN
DEPRESSES FEVER
CONTROLS INFLAMMATORY REACTIONS
IMPROVES SENSE OF WELL-BEING
IMPROVES APPETITE

FORMULA

A *LONG-ACTING* preparation designed for Veterinary use:

Each cc. contains

ACTH . . . . . .30 AVU*

Crystalline Vitamin B_{12} . . . . . .1000 mcg. in 16% gelatine with 0.5% phenol.

***ARMOUR VETERINARY UNIT**
Each unit provides the physiological response equivalent to 1 U.S.P. unit or 1 I.U.

Clinical trials showed an improvement in neurological status, or recovery in a large percentage of cases not amenable to other forms of therapy.

1. Early and acute stages of canine distemper.
2. Complications of the distemper syndrome, including:
   a. Posterior paralysis
   b. Chorea
   c. Encephalitic symptoms
   d. Hard pad syndrome
3. Paralysis occasionally seen following rabies immunization.
4. Certain convulsive states.
5. Generalized asthenia of neurologic origin.
6. For the relief of pain in neuritis.

CAUTION
The phenol content of ACB-12 (Armour) precludes its use in felines. Administer intramuscularly or subcutaneously under aseptic conditions.

FEDERAL LAW RESTRICTS THIS DRUG TO SALE BY OR ON THE ORDER OF A LICENSED VETERINARIAN

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ACB-12 (Armour) is supplied as a sterile 5 cc. multiple dose vial containing 30 A.V.U. highly purified ACTH and 1000 micrograms crystalline Vitamin B_{12} per cc.

ARMOUR VETERINARY LABORATORIES
A Division of Armour and Company
CHICAGO 9, ILLINOIS

(Continued from p. 24)

BROWN, MARJORIE T., D.V.M.
Rt. 2, Box 26, Lake Villa, Ill.
BROWN, RICHARD J., D.V.M.
Lake Shore Dr., Winthrop Harbor, Ill.
BUNN, IRVIN C., D.V.M.
R.F.D. No. 2, Nebo, Ill.
CHAFFEE, VINCENT W., D.V.M.
Warrensburg, Ill.
DODSON, ROBERT C., D.V.M.
15147 Loomis Ave., Harvey, Ill.
Vouchers: H. J. Hardenbrook and A. G. Schiller.
FISCHER, GILBERT C., D.V.M.
5225 N. Hoyne Ave., Chicago, Ill.
Vouchers: R. Link and A. H. Safanie.
GRIFFITHS, ALBERT O., D.V.M.
302 W. Church St., Champaign, Ill.
HOBSON, HOWARD P., D.V.M.
R.R. No. 1, Greenfield, Ill.
Vouchers: R. F. Ziegler and H. J. Hardenbrook.
HOPKINS, WILLIAM E., D.V.M.
905 S. Sixth St., Champaign, Ill.
Vouchers: R. Link and T. N. Phillips.
IVERSON, GORDON J., D.V.M.
P.O. Box 196, Lake Zurich, Ill.
Vouchers: H. J. Hardenbrook and A. G. Schiller.
KERN, ROBERT G., D.V.M.
104 Carlyle Ave., Belleville, Ill.
Vouchers: R. Link and A. G. Schiller.
KLECKNER, MARLIN D., D.V.M.
1107 W. Green St., Urbana, Ill.
LEONDIS, PAUL G., D.V.M.
1504 Carolina Dr., Urbana, Ill.
Vouchers: T. N. Phillips and A. G. Schiller.
LEWIS, CHARLES E., D.V.M.
300 S. Goodwin, Urbana, Ill.
Vouchers: R. Link and L. E. Hanson.
MAUDLIN, THOMAS A., D.V.M.
509 W. Nevada, Urbana, Ill.
Vouchers: B. Brodie and L. C. Helper.
McCONNELL, DAVID A., D.V.M.
McConnell Rd., Woodstock, Ill.
Vouchers: R. Link and T. N. Phillips.
MORRIS, ROBERT C., D.V.M.
520 E. Madison, Chrisman, Ill.
Vouchers: R. W. Abell and L. E. Boley.
OTTWEIN, MERRILL W., D.V.M.
312 W. Hill St., Champaign, Ill.
Vouchers: H. J. Hardenbrook and A. G. Schiller.
PELLOCK, MIKE, D.V.M.
718 N. Seventh St., Benld, Ill.
PETERSON, HOWARD, D.V.M.
R.R. 1, Sharon, Wis.
Vouchers: T. N. Phillips and R. F. Ziegler.
QUINN, PAUL S., D.V.M.
110 W. Kirby Ave., Champaign, Ill.
Vouchers: R. Link and J. O. Alberts.
ROSBOROUGH, JOHN P., D.V.M.
803½ W. Green St., Urbana, Ill.
ROSSI, CHARLES R., D.V.M.
2711 N. 77th Ave., Elmwood Park, Ill.
Vouchers: T. N. Phillips and L. Helper.
SANDERSON, WAYNE, D.V.M.
County Court House, Shelbyville, Ill.
TAYLOR, GREGG W., D.V.M.
G-41-C Stadium Tr., Champaign, Ill.
TWARDOCK, A. ROBERT, D.V.M.
311 Fairlawn, Urbana, Ill.
WARREN, DAVID R., D.V.M.
4025 N. Harding Ave., Chicago, Ill.
WEST, RONALD G., D.V.M.
349 W. Florence St., Oglesby, Ill.

Kansas State College*

All of the following applicants, with the exception of those otherwise noted, were vouched for by Drs. E. J. Frick and J. E. Mosier.

BATES, CLAUDE P., Jr., D.V.M.
1931 N. 16th St., Kansas City, Kan.
Vouchers: E. J. Frick and E. R. Frank.
BAXTER, RICHARD D., D.V.M.
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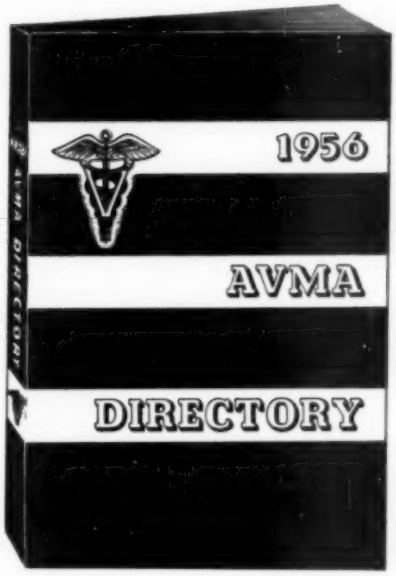

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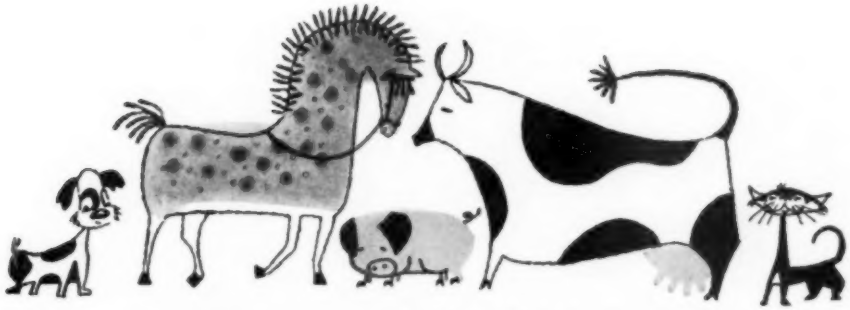

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1. Rachman, M., and Frucht, T. R.: Vet. Med. *49*:341, 1954.
2. Sternfels, M.: Vet. Med. *50*:82, 1955.

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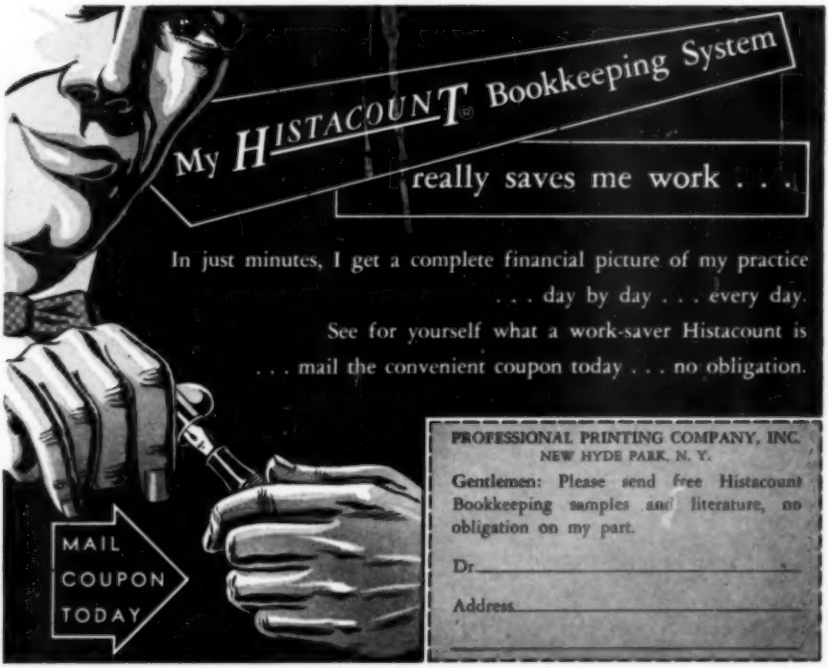
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Mississippi State Veterinary Association. Annual meeting. Buena Vista Hotel, Biloxi, July 15-17, 1956. Harvey F. McCrory, P.O. Box 536, State College, secretary.

Kentucky Veterinary Medical Association. Annual meeting. Seelbach Hotel, Louisville, July 16-17, 1956. Robert H. Singer, 136 Shawnee Pl., Lexington, secretary.

Iowa State College. Annual conference for veterinarians. Memorial Union, Iowa State College, Ames, July 17-18, 1956. John B. Herrick, Iowa State College, Ames, co-chairman of conference.

Virginia Veterinary Medical Association. Summer meeting. Natural Bridge Hotel, Natural Bridge, July 15-17, 1956. Wilson B. Bell, 1303 Hillcrest Dr., Blacksburg, secretary.

Canadian Veterinary Association and the College of Veterinary Medicine of the Province of Quebec. Annual joint congress. Sheraton-Mont Royal Hotel, Montreal, July 19-21, 1956. Jacques St. Georges, publicity committee.

Alabama Polytechnic Institute. Annual conference for veterinarians. School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala., July 22-25, 1956. R. S. Sugg, dean.

Michigan State University, College of Veterinary Medicine. One-day conference on radiology for veterinary practitioners. Kellogg Center, M.S.U. campus, East Lansing, Aug. 1, 1956. C. F. Clark, dean.

Veterinary Public Health Session, to be held in conjunction with the annual health conference, Pennsylvania State University, State College, Pa., on Aug. 21, 1956, at 2:00 p.m. Rabies, trichinosis, brucellosis, and food poisoning will be discussed. Ernest J. Witte, P.O. Box 90, Harrisburg, Pa., chief, Division of Veterinary Public Health.

Colorado Veterinary Medical Association. Annual meeting. Estes Park, Sept. 7-9, 1956. G. H. Gilbert, 5500 Wadsworth Blvd. Arvada, Colo., secretary.

New Mexico Veterinary Medical Association. Annual meeting. Cal Boykin Hotel, Portales, Sept. 10-11, 1956. W. L. Black, Portales, N. M., chairman, program committee.

Pennsylvania State Veterinary Medical Association. Annual meeting. Bedford Springs Hotel, Bedford, Pa., Sept. 12-14, 1956. Raymond C. Snyder, N.W. Corner Walnut St., and Copley Rd., Upper Darby, Pa., secretary.

New York State Veterinary Medical Society, Annual meeting. Concord Hotel, Kiamesha Lake, N. Y., Sept. 19-21, 1956. L. W. Goodman, 2303 Northern Blvd., Manhasset, general chairman; Miss Joan S. Halat, 803 Varick St., Utica, secretary.

Washington State Veterinary Medical Association. Annual meeting. Davenport Hotel, Spokane, Sept. 21-22, 1956. P. J. Pfarr, 6306 N. Wall St., Spokane 53, general chairman.

Oklahoma conference for veterinarians. School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater, Sept. 27-28, 1956. A. L. Malle, Department of Veterinary Pathology, chairman.

Missouri, University of. Annual short course for veterinarians. School of Veterinary Medicine, University of Missouri, Columbia, Oct. 1-2, 1956. Cecil Elder, chairman, short course committee.

Eastern Iowa Veterinary Association, Inc. Annual meeting. Hotel Montrose, Cedar Rapids, Oct. 4-5, 1956. Forrest E. Brutsman, Traer, secretary.

South Dakota Veterinary Medical Association. Annual meeting. Hotel Cataract, Sioux Falls, Oct. 4-5, 1956. J. L. Noordsy, Marion, S. Dak., secretary.

American Veterinary Medical Association. Annual meeting. Municipal Auditorium, San Antonio, Texas. Oct. 15-18, 1956. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Veterinary Symposium on Dogs. Kankakee Civic Auditorium, Kankakee, Ill., Oct. 24, 1956. Mr. Harry Miller, Gaines Dog Research Center, 250 Park Ave., New York 17, N. Y., director.

Mississippi Valley Veterinary Medical Association. Annual meeting. Hotel Pere Marquette, Peoria, Ill., Nov. 7-8, 1956. William L. Beer, 612 N. College Ave., Aledo, Ill., secretary.

U. S. Livestock Sanitary Association. Annual meeting. Morrison Hotel, Chicago, Ill., Nov. 28-30, 1956. R. A. Hendershott, 33 Oak Lane, Trenton 8, N. J., secretary.

Animal Care Panel. Annual meeting. Morrison Hotel, Chicago, Ill., Nov. 29-30, 1956. Robert J. Flynn, P.O. Box 299, Lemont, Ill., secretary.

Nebraska Veterinary Medical Association. Annual meeting. Hotel Lincoln, Lincoln, Dec. 3-5, 1956. W. T. Spencer, 1250 North 37th St., Lincoln, secretary.

Foreign Meetings

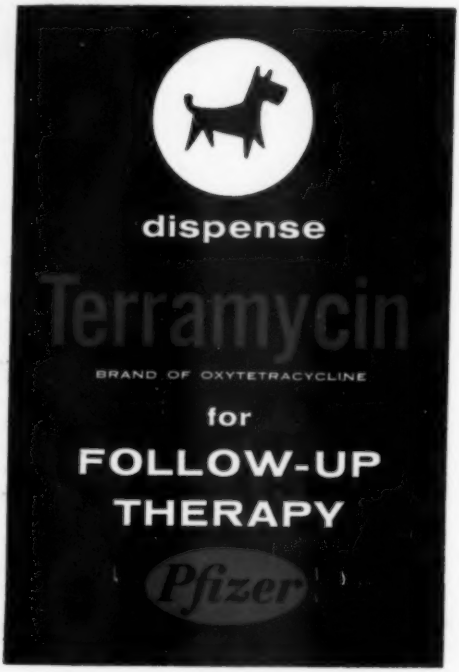
Veterinary Conference, Jamaica Branch, British Caribbean Veterinary Association, Jamaica, B.W.I., July 28-Aug. 8, 1956. C. L. Bent, Veterinary Division, Department of Agriculture, Hope, Kingston, Jamaica, B.W.I. honorary secretary.

Tenth International Congress of Entomology. McGill University and University of Montreal, Montreal, Canada, Aug. 17-25, 1956. J. A. Downes, Division of Entomology, Science Service Bldg., Ottawa, Ont., Canada, secretary.

International Association of Hydatidology. Sixth Congress. Athens, Greece, Sept. 14-18, 1956. Prof. B. Kourias, 1 MacKenzie King St., Athens, Greece, general secretary.

British Veterinary Association. Annual Congress. Royal Leamington Spa, Leamington, England, Sept. 16-22, 1956. Mr. F. Knight, 7, Mansfield St., Portland Pl., London, W.1, general secretary.

(Continued on p. 33)



(COMING MEETINGS—*continued from p. 32*)

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. W. R. Laster, Jr., 213 N. 15th St., Birmingham, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Pima County Veterinary Medical Association, the third Wednesday of each month in Tucson. E. T. Anderson, 8420 Tanque Verde Rd., Tucson, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2, Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Bay Counties Veterinary Medical Association, the second Tuesday of each month. E. Paul, Redwood City, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Wilfred Pimentel, 3455 S. Elm Ave., Fresno, Calif., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. Leo Goldson, 3793 Broadway, Oakland 11, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. T. D. Harris, San Mateo, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. Howard C. Taylor, 2811 West Olive St., Burbank, Calif., secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth

(*Continued on p. 34*)

Jen-Sal

small animal
therapy note

Canine Wart Vaccine: a practice builder

Your clients will be highly pleased with the dramatic results obtainable with Jen-Sal's Canine Wart Vaccine. This product is prepared from canine oral papillomas and in tests has proved 100% effective following two subcutaneous 2 cc. injections. The suggested dosage is 2 cc. subcutaneously, or 0.5 cc. intradermally, at 10 to 14 day intervals. Another contribution to small animal medicine from Jen-Sal research.

six 2 cc. vials
code: Walto $6.00

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Kansas City, Missouri

Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Jacksonville Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. George F. Yopp, 4644 Main St., Jacksonville, Fla., Secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. Ross E. Evans, 5215 S. Dixie Highway, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. D. Stoddard, 6432 S. W. 8th St., Miami, Fla., secretary.

Suwannee Valley Veterinary Association, the third Friday of each month, at the Thomas Hotel, Gainesville, Fla. R. C. Mann, Rt. 1, Box 37, Ocala, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month, except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association the third Thursday of each month. W. E. Sharp, Union City, Ind., secretary.

IOWA—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. H. V. Henderson, Reinbeck, Iowa, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville

(*Continued on p. 36*)

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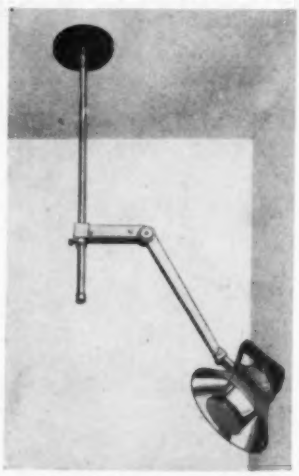

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distemper hepatitis
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or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Hotel, Spring Ave. and Lindell Blvd. Allen B. Shopmaker, 136 N. Meramec, Clayton 5, Mo., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at alternating hospitals. W. F. Noland, 7504 Metcalf, Overland Park, Kan., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genessee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Southern New Jersey Veterinary Medical Association, the third Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. W. E. Snyder, E. Kings Highway and Munn Ave., Haddonfield, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

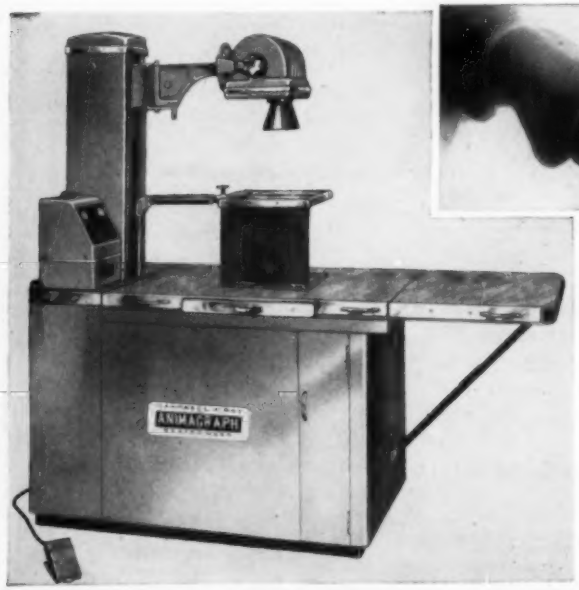
NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. J. W. Peace, High Point, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month. Wm. Allen Potts, 401 W. James St., Mount Olive, secretary.

Piedmont Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in Mull's Motel in Hickory, N. Car. W. W. Dickson, Box 1071, Gastonia, N. Car., secretary.

OHIO—Cuyahoga County Veterinary Medical Association, the first Wednesday of each month, September through May (except January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

(*Continued on p. 40*)



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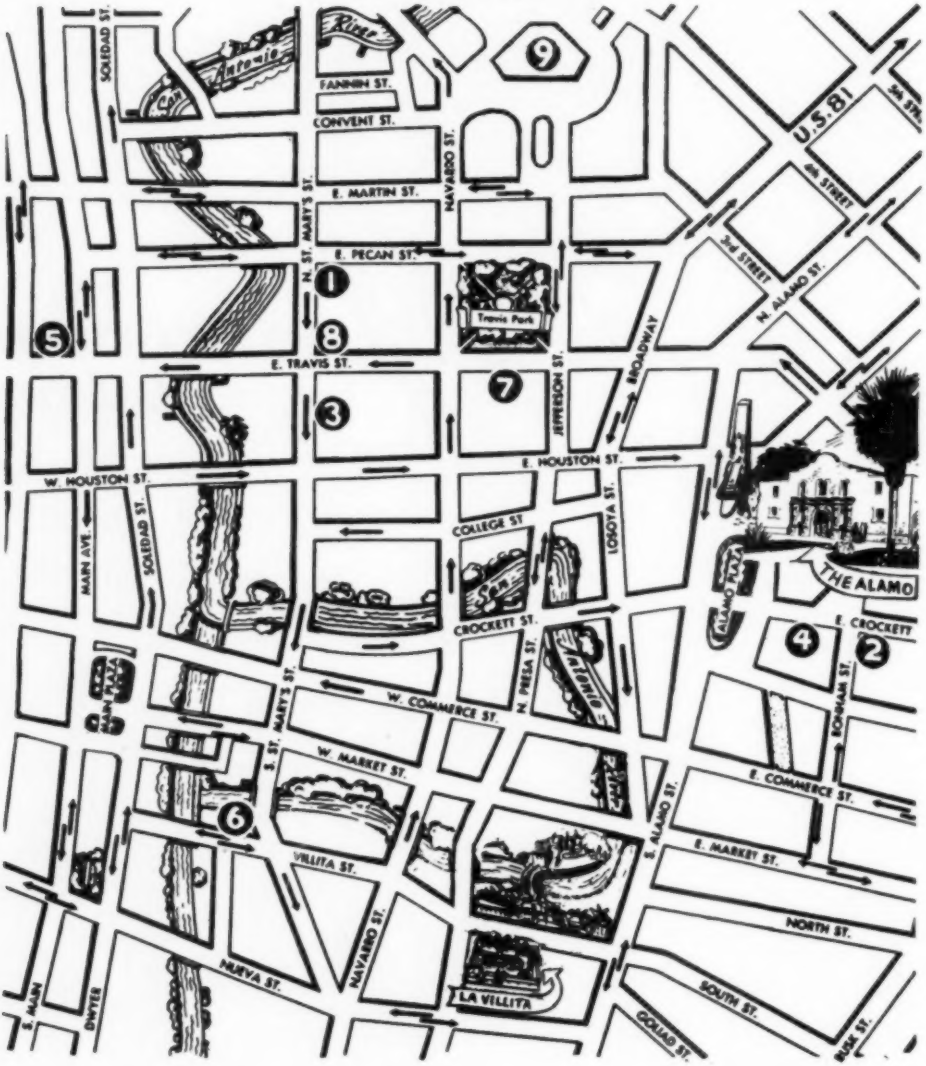
Hotel Map of San Antonio

The general sessions and larger section meetings will be held at the Municipal Auditorium (No. 9). The smaller section meetings will be held at the Gunter Hotel (No. 3).



1. Blue Bonnet Hotel
2. Crockett Hotel
3. Gunter Hotel
4. Menger Hotel
5. Robert E. Lee Hotel
6. Plaza Hotel
7. St. Anthony Hotel
8. White Plaza Hotel
9. Auditorium

Motel Information—Motels listed on the reservation form are located on Austin Highway, U.S. 81, which enters San Antonio via Broadway. Rio Lado Motel is at 1100 N. St. Mary's St., near the business section.

HOTEL RESERVATIONS — SAN ANTONIO CONVENTION

Ninety-Third Annual AVMA Meeting, Oct. 15-18, 1956

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotels—Motels and Rates (all are air-conditioned)

HOTEL	SINGLE	DOUBLE	TWIN BEDS
1. Blue Bonnet	$3.00-5.00	$5.00-8.00	$.....
2. Crockett	$3.50-4.50	$5.50-6.50	.....
3. Gunter	$5.00 and up	$6.50 and up	.....
4. Menger	$5.00-8.00	$7.00-12.00	.....
5. Robert E. Lee	$3.50-5.00	$5.00-6.00	$6.00-8.00
6. St. Anthony	$5.00 and up	$7.00 and up	.....
7. White Plaza	$3.25 and up	$4.75 and up	.....

MOTEL	RATES
1. Aero	$7.50-9.00
2. Aloha	$6.00 and up
3. Belvedere	$6.00-10.00
4. Casa Linda	$6.00 and up
5. Koronado	$5.00 and up
6. Park	$4.00-15.00
7. Rio Lado	$6.00-10.00
8. The Westerner	$5.00 and up
9. Flamingo	$6.00 and up

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RESERVATION FORM — AVMA CONVENTION — SAN ANTONIO

To: HOUSING BUREAU, San Antonio Visitors and Information Department, Chamber of Commerce, Insurance Building, San Antonio 5, Texas.

Please make reservations indicated below:

HOTEL

———Single room(s) at $_____

———Double bed room(s) at $_____

———Twin-bed room(s) at $_____

———Suite (specify type of accommodations wanted)

(Three choices MUST be shown)

First choice hotel _____

Second choice hotel _____

Third choice hotel _____

MOTEL

Indicate type of accommodations

(_____)
Unit, Cabin,

wanted for _____ persons at $_____
No. rate

(Three choices MUST be shown)

First choice motel _____

Second choice motel _____

Third choice motel _____

Arriving on (date) _____ at _____ a.m. _____ p.m.

Leaving on (date) _____ at _____ a.m. _____ p.m.

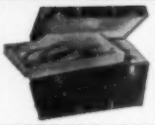
Will be occupied by (attach list of additional names if necessary).

Your Name (Print or Type) _____

Street Address _____ City and State or Province _____

NICHOLSON

veterinary equipment news



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new do-it-yourself Plasti-Plated cages

Before you buy cages, write for folder N-2 on our amazing new Plasti-Plated kennels. Rock-hard, glass-smooth, seamless surfaces. Inexpensive, easy to do-it-yourself!

electric "B" dairy cow branding iron

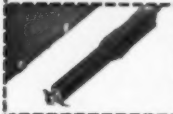
Heats in 90 seconds, makes a clean brand, weighs only 11 ounces. T and V brands available too. Uses 110 v. current, won't smoke. Write for folder N-3.

new! clear plastic cases for your glass syringes

Keep syringes sterile, clean in these light, unbreakable plastic cases. Covers for 5, 10 and 20 cc. syringes, $5.75 set, folder N-4 gives details.

new! plastic sign letters for your hospital

Our new selection of beautiful weatherproof plastic signs will dress-up your office or clinic. All sizes, colors; easily installed. Write for folder N-5.



hi-current electric firing iron

Most modern, up-to-date way to fire horses, remove warty growths, ear polypi, tumors. Complete with 11 points/tips. Write for folder N-6.

☐ folder N-1 cases ☐ folder N-2 Plasti-Plate ☐ folder N-3 "B" irons

☐ folder N-4 syringe cases ☐ folder N-5 sign letters ☐ folder N-6 firing irons

Please send me the folders I've checked above.

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street

city

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2440 East Third Avenue Denver 6

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(COMING MEETINGS—*continued from p. 36*)

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month except July and August. James M. Brown, 2818 W. Britton Rd., Oklahoma City, secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Merle S. Watts, 5302 E. 11th St., Tulsa, Okla., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary St., Richmond 20, Va., secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Tuesday of each month in the Trinity Episcopal Church, 8th and James St., Seattle, Wash. P. R. Des Rosiers, 5508 2nd Ave., N. W., Seattle 7, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. L. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W., Huntington, W. Va., secretary.

WISCONSIN—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

Swine with Tassel Appendages.—A breed of swine in Indonesia often has a cylindrical appendage about 3 inches long hanging from each jowl. The center is cartilaginous and the skin is covered with bristles. They resemble certain breeds of goats.—*Indonesian J. Anim. Sci., Dec., 1955.*

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—repaired in bottom clipper blades. Top and bottom blades sharpened to match. Save money—Guaranteed. Prices on Request
HIGHLY SPECIALIZED SHARPENING
Sales—Repairing on Oster and Stewart clippers.
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OSTER A-2 $25 STEWART 31 00
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For JOURNAL dated *15th of month* — 22nd of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Veterinarians

Veterinarian wanted with New York State license to assist in busy New York City small animal hospital. Partnership and eventual ownership possible in near future. Write experience, salary desired, and financial capabilities. Address "Box N 5," c/o JOURNAL of the AVMA.

(*Continued on p. 42*)

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Another accurate smooth working ground glass barrel — leak proof metal plunger instrument with many possibilities. Adjustable for any capacity. By attaching one end of a rubber tube to the self-filling syringe and the other to a bottle of serum or vaccine any number of quick 1/4cc to 5cc accurate dose injections can be made. The instrument is operated with one hand. Anyone who injects a large number of animals will find the Self-Filling Syringe will pay for itself both in labor and serum saved after the first day's use.

Sizes 2cc and 5cc

Literature upon request

Inquire at your nearest veterinary dealer or wholesaler about this new improved outstanding product.

Boston Instrument Mfg. Co. Inc., 50 Thayer Street, Boston 18, Mass.

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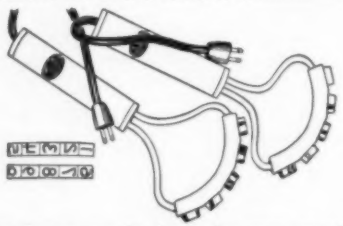

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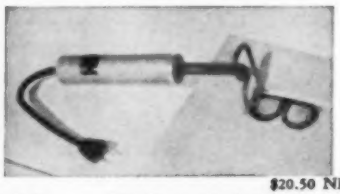

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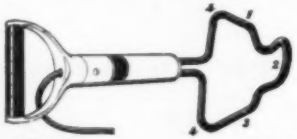

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It's Simple . . .
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For Doctors... Printing and Patients' Records
PROFESSIONAL PRINTING CO., INC.
NEW HYDE PARK, N. Y.

(CLASSIFIED ADS—*continued from p. 41*)

Veterinarian wanted with some experience for small animal hospital; good salary, apartment available. Address Owen Animal Hospital, 7737 Gratiot Ave., Detroit, Mich.

Veterinarian wanted with Connecticut license to take charge of interesting practice; ultra-modern hospital; 25% large animal work. Address "Box N 10," c/o JOURNAL of the AVMA.

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Experienced veterinarian, small animals, desires position leading to management, partnership, or ownership; Los Angeles area preferred. California license. Address "Box N 9," c/o JOURNAL of the AVMA.

Graduate, 1954, desires position in progressive mixed or small animal practice in Northwest or in California upon completion of military service in September. Licensed four states; references available. Address "Box N 12," c/o JOURNAL of the AVMA.

Remittance must accompany advertisement

Graduate, 1953, University of Munich, Germany (graduates of this year are recommended by AVMA for recognition by State Boards and other agencies) desires position to refresh knowledge of small animal or mixed practice, or institutional work. Out of practice 1 year; available at once; unmarried. Address "Box N 15," c/o JOURNAL of the AVMA.

(*Continued on p. 43*)

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Quick relief for Bone, Bursal or Tendon Lameness
Single Bottle.....$2.00
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12 and 4 free.....17.00
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Skin Adherent No. 2
Non-irritating liquid adhesive
for strapping and padding
Send for Sample
The MOWBRAY COMPANY,
Waverly, Iowa

(CLASSIFIED ADS—*continued from p. 42*)

Wanted—Practices

Small animal practice wanted in New York State; ample capital. Must be a going, established practice completely equipped. Address "Box E 7," c/o JOURNAL of the AVMA.

Small animal practice wanted or position leading to purchase or partnership; thorough experience, age 30, married. Consider any good location. Address "Box N 6," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Small animal practice for sale in southern California; no real estate. Must sell quickly or lease with option to buy; reason, health. Priced within reason within liberal terms. Address "Box L 13," c/o JOURNAL of the AVMA.

Excellent, newly established, small animal clinic for sale in large Texas city; has great potentialities; $10,000 down plus inventory (optional). Will finance balance. Address "Box M 7," c/o JOURNAL of the AVMA.

For semi-retired veterinarian—beautiful mountain home with office in basement. Permanent population, 5,000; vacationers, 20,000. No competition. Price $18,500; must have $10,000 cash. Box 866, Big Bear Lake, Calif.

(*Continued on p. 46*)

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If so, let us know your new address at least five weeks in advance.

And when you write, be sure to enclose an old address label clipped from a recent JOURNAL envelope. It will help us give you better service.

Send your change of address to the JOURNAL of the American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill.

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JOURNAL *of the AVMA*

Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals, which is ethical publication procedure.

Manuscripts.—Manuscripts, including **footnotes, references,** and **tables,** must be typewritten, **double-spaced,** on 8½- by 11-in. bond paper, and the **original,** not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the JOURNAL of the American Veterinary Medical Association with a minimum of reduction. Photomicrographs which can not be reduced should be marked for cropping to 1-column or 2-column width. Identifying marks within the photomicrographs, such as arrows, letters, or numbers, should be clearly marked with black India ink or white opaque ink to insure good reproduction and must be large enough to stand reduction, if necessary. Drawings, graphs, and charts should be made clearly and accurately in India ink on white paper and a glossy print of them submitted when possible. Numbers or letters appearing on graphs or charts should be large enough to allow for any reduction necessary for the chart or graph to fit JOURNAL pages. Blue lines in graph paper drop out in reproduction; therefore, if lines are required they must be drawn in black ink. All illustrations should bear the name of the author and the illustration number on the back.

Tables.—Tables should be simple and typed **double space.** Complex tables are not conducive to perusal. It is wiser to summarize complex material than to tabulate it.

References.—References should be typed **double space** and should be prepared in the following style: name of author, title of article, name of periodical with volume, year, and page numbers. References to journals not commonly known should give the complete name of the periodical, and where published so that they may be added to our reference files. When books are cited, the name of publisher, location, edition, and year should be given.

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The Lederle strain of distemper virus, modified by serial passage in an unnatural host — the chick embryo. Each lot is potency tested in ferrets. Vacuum-dried for stability.

Vaccinate puppies as soon as possible after weaning, at time of their *first* hospital visit. Permanent immunity normally develops within 10 days. When indicated, provide temporary protection with antiserum until permanent immunity is developed.

1 TO 2 WEEKS AFTER WEANING:
Antiserum and distemper vaccine.

2 WEEKS LATER:
Hepatitis and leptospirosis vaccines.

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Second dose, hepatitis and leptospirosis vaccines.

5 TO 6 MONTHS:
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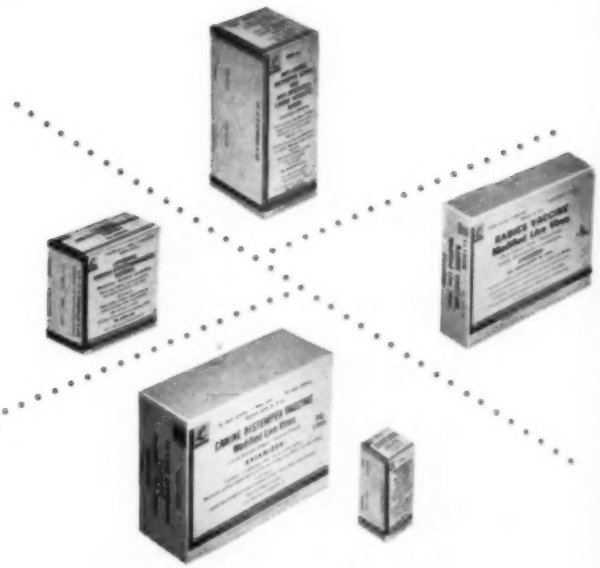

VACCINE

AMERICAN CYANAMID COMPANY PEARL RIVER, NEW YORK

(Continued from p. 45)

Mixed practice for sale in Indiana; 85% large animals. Six-room home, 4-room office combination; $5,000 down will handle. Address "Box H 7," c/o JOURNAL of the AVMA.

Mixed practice, approximately 90% dairy cattle, for sale in Wisconsin; drugs and equipment, including 2-way radio; no real estate. Address "Box N 1," c/o JOURNAL of the AVMA.

Mixed practice for sale in northern Michigan; 5-room brick home, separate small animal hospital, drugs, equipment. Price of real estate only. Ill health necessitates other interests. Address "Box N 2," c/o JOURNAL of the AVMA.

Established dairy practice for sale in western New York; excellent opportunity for 1 or 2 men to operate modern veterinary practice in an ever-expanding dairy area. Includes office and home; $10,000 down, mortgage arranged for balance. Address "Box N 3," c/o JOURNAL of the AVMA.

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(Continued on p. 48)

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100,000 units penicillin
50,000 mcg. dihydrostreptomycin

MASTICS act fast because medication in high concentration is quickly dispersed throughout the quarter. Improvement often noted in 12 hours.

MASTICS contain no grease, no wax, no insoluble materials to remain in the udder retarding antibiotic action. MASTICS milk out completely—produce no residue on the strainer.

MASTICS are so effective, cows are returned to the herd more promptly with less loss of production.

LOW IN COST...HIGH IN POTENCY
MASTICS SAVE TIME, MONEY, MILK

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BRAND OF OXYTETRACYCLINE
for
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the positive answer to your disposal problems . . .

WITHOUT SMOKE, ODOR OR FLY-ASH

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"POSITIVE PRESSURE"
MODEL 40
Crematory
DESTRUCTOR

This Crematory **DESTRUCTOR** is the *only* type that is positively fulfilling every health and sanitation requirement by completely destroying small animal and poultry carcasses, kennel waste, laboratory and hospital refuse to a white ash with "positive pressure", odorless and smokeless operation without a chimney

The Crematory **DESTRUCTOR** improves neighborhood relations with its smokeless, odorless, sparkless operation. Immediate disposal of carcasses and waste material eliminates the need for refrigerated storage equipment, unsanitary refuse cans and scavenger truck pick-up service . . . permitting "hospital clean" maintenance of premises.

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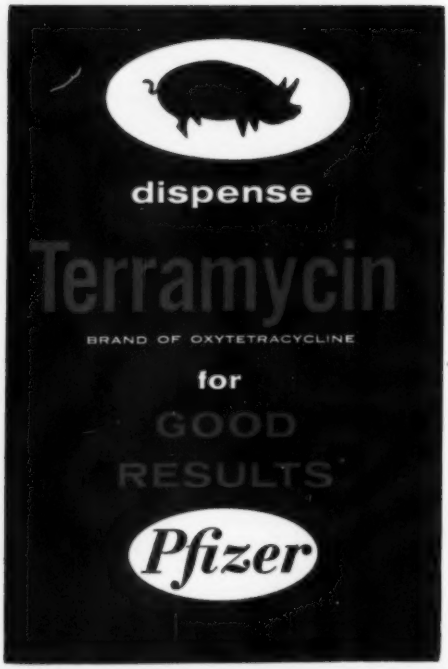

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Well-established practice for sale in central Minnesota; 85% dairy and hog; 15% small animals. Full price $10,600 includes drugs, instruments, and completely equipped, downtown hospital; $2,600 will handle. Address "Box N 13," c/o JOURNAL of the AVMA.

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To all veterinarians—am desirous of locating party by name of HENRY ROSE owner of male full-blooded Boxer name "Ronnie." Address "Box N 11," c/o JOURNAL of the AVMA.

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Pregnancy diagnosis in mares—45th to 150th day. Request mailing tubes; $7.00, 2 or more, $6.00 each. Pregnancy Diagnostic Laboratories, Dysart, Iowa.

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• FLY KILLER DRY BAIT

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...for bloat and other digestive dysfunctions.

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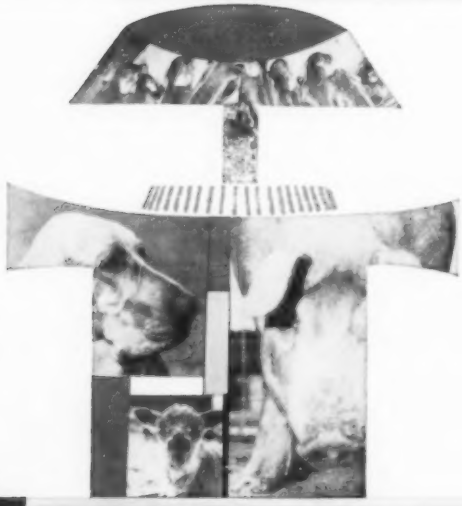

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